

SUPER COLLECTOR'S ISSUE!

January 1990



Radio Control **CAR ACTION**

47380

CANADA \$3.75

EAST-WEST
High Banked
OVAL SHOOTOUT
RC THUNDERDROME

READER RIDER
OF THE YEAR
\$1000 IN PRIZES

BUILDING IT RIGHT!

The ROOTS of R/C

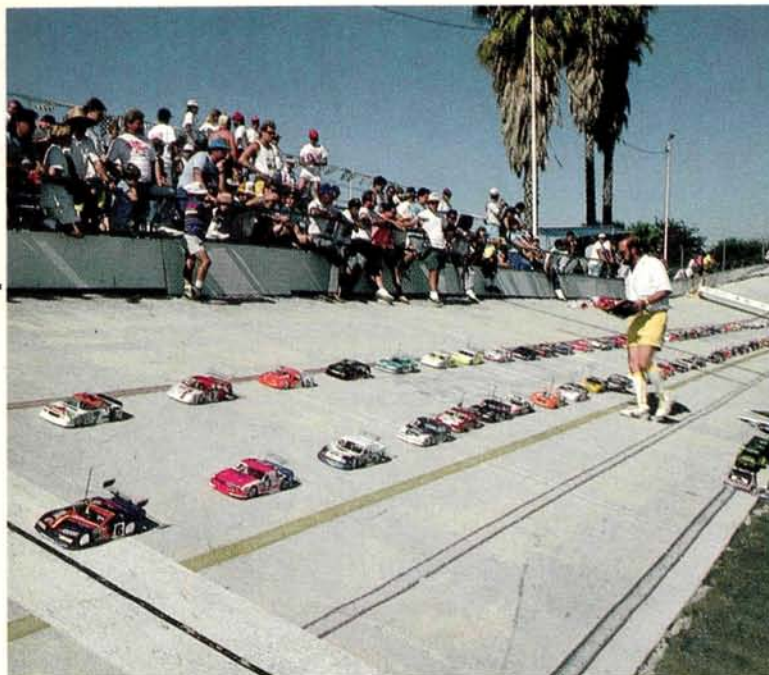
2 TOP FUELERS!

FIRST REPORT:
AUSTRALIAN
WORLD CHAMPS

HOT TO 10

NO POSERS!





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January 1990

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INSIDE SCOOP

by Chris Chianelli

ON THE COVER: After three-and-a-half years, Car Action's Executive Editor, Chris Chianelli, and his dog, Luna, leave in search of fame and fortune with rock band, Gregory's Funhouse (photo by Steve Pond). Winner of our "Readers' Rides Car of the Year," Larry Maties' Orange Crush Tank (photo by Steve Pond). The Parade of Cars at the RC Thunderdrome drew over 200 cars (photo by Rich Hemstreet). Horizon's TQ 10 in flight (photo by Steve Pond).

EDITORIAL

by CHRIS CHIANELLI

WELL, goodbye; I'm off to join the circus—or so it might seem! Actually, I've been drafted into the ranks of Gregory's Funhouse as a guitar player. The second album is finished, and I now go on the road with this aggregate of misfits in an attempt to make it sell. I guess it's a once-in-a-lifetime deal, so I *must* go. Anyway, like some of you, I never did believe in hiding my head in the sand. I'm really looking forward to it, except for one thing: I can't decide which monster truck to take with me—the Big Boss or my trusty old Blackfoot. Think I'll take both, in case I get kidnaped by a pair of green eyes with a French accent, never to be heard from again!

I thank all of you, because my *Car Action* experience has been one of the high points of my life, and I have you, our readers, to thank for it. I'll send in a photo or two from backstage, with a few words about how we're doing, and I'll still be associated with the magazine and writing occasional articles.

Meantime, the Wall, Smitty and Ollie David will be keeping things in order. For example, this month, they have a preview of the Worlds, which was held in Australia, and this will be followed by a full-blown report next month. We also have RC Thunderdome coverage—the first half of *Car Action's* East-West Shoot-out. The second half will take place at the upcoming *Car Action* Weekend at Lake Whippoorwill. See?—everything will be just fine.

So, my friends, it's been much fun, but I'm done!

**MESSAGE FROM THE AYATOLLAH:
HE SOLD HIS SOUL FOR ROCK 'N' ROLLA!!!!**



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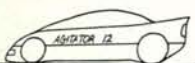
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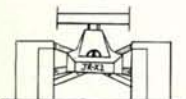
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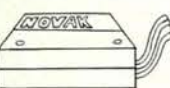
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LETTERS

WHERE TO WRITE TO US

If you're writing to the editors (and we'd love to hear from you), please be sure to address your letters to "Letters," Radio Control Car Action, 251 Danbury Road, Wilton, CT 06897. Only subscription orders and inquiries are handled by our Customer Service Department in Mount Morris, IL; other mail addressed there must be forwarded to Connecticut, which leads to long delays.

Run-Time Problems

Help! I own an almost-stock Tamiya Falcon with a full ball-bearing set and a Parma mechanical speed control. Lately, I've been getting only 2 or 3 minutes of run time. I asked around at a couple of local hobby shops, and everyone thought it was my diff binding. I spent many hours rebuilding it three times, but, as yet, haven't had any luck. My dad says the extreme heat is causing my Ni-Cds to lose their power much faster. I'm running two packs, so it doesn't seem likely that it's my batteries, but about a month ago, my JRL 45 quick-charger bit the dust. It seemed to be charging, but instead of stopping, it just kept going. Could this have messed up my batteries? Please help, as you're my only hope!

JEFF HAMILTON
Richmond, VA

Jeff, it doesn't sound as if the problem is with your car. With the motor removed, you should be able to spin the spur gear with very little effort (about the same amount of effort it takes to squeeze the throttle on a pistol transmitter). If all is well there (and I think it is), check your battery and charger. To check the battery, simply find a friend who can lend you a fresh pack for a couple of runs and see how long it lasts. If the car still won't run for 6 minutes or more, then the battery charger may be the culprit. (I'm assuming that your battery charger has a 15-minute timer.) What often happens is that the chargers charge at a low amperage rate. This won't allow the battery to reach a full charge in 15 minutes, and it results in shorter run times. Generally, the battery should be warm to the touch when completely charged; if it isn't, give it 5 more minutes, and continue to check the temperature of the pack until the timer expires. Continue until the battery be-

comes warm, and you should get more than 10 minutes of fun out of your car, providing you're using the motor that it came with.

SP

Generic Body Stuff

I'm confused. In your "Second Look Series" (page 20) in the September '89 issue, you said that the RC10 came with a Lexan body, but in the specs column (page 123), you said the body was made of polycarbonate. Which is it?

ADAM DONALD
Clear Lake, IA

Adam, your confusion stems from the fact there are many manufacturers of polycarbonate who refer to it as such; General Electric also manufactures polycarbonate, but refers to it as "Lexan," its trademark name. We use polycarbonate from a variety of manufacturers in our models. For the sake of clarity, from here on out, we'll use the generic term "polycarbonate," unless a body manufacturer specifies that his body is formed from Lexan. Just remember: all Lexan is polycarbonate, but not all polycarbonate is Lexan. Is there a difference? Depends on whom you ask.

CC

Frequency Fallacy

I like the Altech Electronics' PK 122 Speed Controller a lot and am very interested in buying one. Before I do, though, I have a few questions. I have a controller with the frequency 27.255MHz. Can I buy the PK 122 for that frequency? Does the PK 122 let all the voltage from my 7.2V battery pack go to my engine? Where can I buy the PK 122 Speed Controller? Thanks for any help you can offer me.

STEVE DICKERSON
Roanoke, VA

Steve, think of the speed controller as a servo: it's after the radio transmitter-receiver link, so it can be used with many different radios, regardless of their frequencies, as long as a connector match

exists (just like a servo). The PK 122 is a reliable, inexpensive unit that will transfer power to the motor much better than any mechanical unit. MRC, the distributor of Altech products, works mostly with dealers, so you should have no problem getting one from your local hobby shop.

CC

It Ain't No Bull!

I just finished reading the article on the TRC/Trinity Challenge in your August '89 issue. Rich Hemstreet is to be congratulated on some excellent photography and article content. I must, however, make this very negative comment: Rich referred to over 300 entrants in various classes, but only 40 names (A-Mains only) were posted in the race results. You disappointed at least 260 racers (plus friends, relatives and sponsors). Correct me if I'm wrong, but the whole R/C racing scene depends on the people who race R/C cars, and not just on the cars. I know, you'll probably respond to this with the usual, "We don't have that much space to list the results of each Main." Well, I'm sure that 99 percent of your readers would agree that's bull, and printing each name should be a priority when covering any major event. Come on *Car Action* and Rich Hemstreet—don't forget the little guy!

BRUCE TRIPLETT
Augusta, GA

Bruce, thanks for the compliment on the TRC/Trinity Challenge race coverage. You're correct when you say that the R/C racing scene depends on the people who race R/C cars, not just on the cars. But I must correct you when you say it's "bull" that we don't have the space. We're always keenly aware of our use of space; the cost of printing the magazine alone requires this. In addition to space requirements, there are many other reasons not to print the results of the 260 racers in the magazine. Consider what it would require: information gathering; an accuracy check; data processing input; technical editing; copy editing; and design of a layout. Once the editors have approved

the final copy, the type must be put on the boards, the boards checked for final approval, and then sent to the printer.

If you think that the 260 "disappointed" racers' results are of interest to 99 percent of our readers, I'm sure that you're mistaken. Our readers have told us in our recent Reader Survey that they're interested in the race results to help them make their purchasing decisions. That means they want to know what the top drivers are using, not who finished 5th in the E-Main.

As for not forgetting "the little guy," *Car Action* has been trying to add more personal-interest aspects to our major race coverage, such as the sidebar in the TRC/Trinity race report that showed Akira Kogawa from Japan and 4-year-old Bradley Blosser racing at Lake Whip-poorwill. Neither driver was in an A-Main, but each added to the flavor of the event. And what do we do with the space that we save by not printing your finishing position? We print other features and how-to articles that really do help the little guy in his effort to race faster or enjoy his hobby more—and that's what our readers want.

RH

Show Us! Show Us!

Your magazine is outstanding, and I'm hooked on racing—so much so, in fact, that I devote a lot of my spare time to tinkering with designs on the CAD system at work. The result is an extremely smooth suspension design that's turning heads at the track (a race with the prototype of my car). Its unusual speed and stability has earned the car a good reputation. I'm trying to get the design out to John Q. Public, but just don't know who to talk to or where to begin. Your RC10 tech articles have fueled many of my ideas, so I've opted to go to the source for direction. I'd appreciate any suggestions or ideas. Thanks for making a great sport and hobby "way cooler!"

CHRIS ANGE
Santa Clara, CA

(Continued on page 10)

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LETTERS

(Continued from page 9)

Chris! send us some photos, drawings, the car itself and we'll photograph it. Not to be arrogant, but if you'd like exposure for your design, you've sent it to the right people. Who knows, some manufacturer may show an interest in kitting the design.

CC

Puzzling Pic

Every day after school, I sit back, relax and enjoy reading your magazine. I usually read it about four times—from cover to cover! All your articles are filled with information and great detail. Keep up the excellent work!

One thing, though: When I read your section on the Chevy-sponsored Carpet Crawlers Truck Pull in the October '89 issue, I was puzzled. On page 66, in the bottom left-hand corner, there's a picture of six engines set next to one another on a chassis, and the article says "Don Wyatt's Blue Ox used *eight* Associated 05 stock motors." All magazines are entitled to make mistakes, and I forgive you.

MATT HOVLAND
Naples, FL

Matt, I'm glad you enjoy the magazine so much. You're right, we're entitled to make mistakes, although we try very hard to avoid them. In the case you mention, however, no mistake was made. There were two motors out of view, one on each side, and they brought the total to eight motors. Thanks for checking up on us, Matt! It helps to keep us on our toes!

WD

Tony the Tiger's Teacher

I've owned a Blackfoot for about two years, as well as a Super Alta Porsche. I live in Rockland County, NY, and wonder if there are any dirt tracks nearby (NY, NJ, CT).

I'm writing this letter for my own information and also as an English assignment. If you like, you can print this in the magazine, but I really needed a letter for English class.

I love your magazine and buy it every month. I have every issue dating back to January '87. Keep up the good work; it's

GRRRRREAT!!! (Tony the Tiger).

JEFF FACINELLI
Pomona, NY

Jeff, thanks for the compliments. By the time you read this, you should have received a grade from your teacher, and we sent you a list of tracks in the states you mentioned; if you haven't received it, let me know.

Oh yes; to Jeff's English teacher: Jeff deserves an A+, considering the nearly perfect letter you see here. What writing potential!

CC

Trouble at the Truck Pull

Two things: First, I found an error in your October '89 issue. On page 67, the caption in the bottom left-hand corner says, "The winning FX10 of Jack Lapan drives over Darrel Vassallo's Traxxas Street Cat in the Demo Derby." In the photo, however, the FX10 (which doesn't look like an FX10) is *under* the Street Cat.

Second, I'm working on a way to put a small bottle of oil in an R/C car, and I need your suggestions. Right now, I'd fill the small bottle with oil, put a balloon with a small slit in the top over the open end of the jar, and seal it with rubber bands. Next, I'd slide a small straw through the slit and seal it with a glue gun. I'd mount everything either on one of the sides, or in the back. A servo would be mounted so that when it was activated, the jar would tip and cause the oil to leave the car and make an oil slick. Any help would be greatly appreciated!

Thanks for an awesome mag! Keep up the good work!!

MARK COWGILL
Plainfield, IL

Mark, I was very amused by your letter. Regarding the first part, I think you need to become more familiar with different model cars. The car on the bottom is, in fact, a Traxxas Street Cat (a version of the Cat that comes with on-road treaded-type tires). The car on top (with the

(Continued on page 14)

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PUBLISHER'S PAGE

by LOUIS V. DeFRANCESCO, JR.



THIS ISSUE USHERS in 1990, and with it comes an array of questions about what's in store for the hobby during the upcoming year. What new trends will develop? Will R/C keep growing at this accelerated pace? What innovative products will be introduced? And on and on....

I'm very optimistic, as with each month, we experience still more growth and gain many new readers. As for trends, my call is the movement toward on-road vehicles. Our reader correspondence, which is usually a barometer of trends, indicates a growing interest. Many manufacturers are producing more kits to convert your off-roaders into on-roaders, and there are new chassis designs, tires and a slew of new NASCAR-type bodies. It's a natural transition, since one of America's greatest pastimes is stock-car racing. Sportsmen like Bobby Allison, Richard Petty, Junior Johnson and many others have become household names.

We, of course, have reacted to this burgeoning market by introducing a special on-road publication that will be available to you in early February, so look for it at your local hobby shop or newsstand. In keeping with the on-road spirit, this first issue of 1990 features the Californian segment of our East-West Shoot-out—Thunderdrome! It was a resounding success, and you can read all about the high-banked oval action that took place there. I want to thank Gary McAllister of McAllister Racing and Dan Moynihan of Dan's RC Stuff for putting on one spectacular event; it's efforts like theirs that really help get the R/C name out there.

After being with my company for almost seven years, Chris Chianelli is embarking full-time on his musical career, as his band, Gregory's Fun House, goes on a national tour. I first met Chris when he showed up at the office one day and told me he could build and fly R/C airplanes. At the time, I had just taken over one of our sister magazines, *Model Airplane News*, and I needed contributors. I took one look at his heavy-metal hair and leather pants and incredulously said, "You're hired!" *Car Action* was still three years away, but Chris was able to evolve with this young, maverick company. Chris will still write occasional articles, and I'm sure he'll be coming by the office to see which new products he can squirrel away from Rich Hemstreet or Steve Pond! He'll be missed. Good luck in this upcoming year!

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LETTERS

(Continued from page 10)

Goodwrench body) is an FX10, which won the Demo Derby. I'll be the first to admit when a mistake has been made, but in this case, we're in the clear.

And about that oil slick: Who do you think you are, James Bond??!! Don't even think of trying that on a race track, or you'll really have to make a quick getaway!

WD

Stinger Mark II Overdue!

I love this magazine! I'm only 13 years old and new to it, but it's awesome! I wrote to ask about the Stinger MK II. As you know, it's 4WD, but is there a 2WD version, or a way to convert it? Please send me any information you can. Your new, but loyal, reader,

MATT QUATTLEBAUM

Matt, I know that a review of the Stinger II is long overdue, but there will be a full Track Report within the next couple of issues. If you want a 2WD 1/10-scale gas-ser, check out the Rampage.

CC

NOTE IS LEGAL TENDER
IF BILLS, PUBLIC AND PRIVATE

I wish I
was
driving!

B

9540 D

Sealed Original



Fox Follow-up/Purple Hair

I'm really impressed with my Tamiya Fox, and I was twice as impressed when you did a total make-over of the car. All your ideas work very well. I didn't see the address for Brimrod and would appreciate it if Crazy Chris can give it to me. I totally agree with Russell Hamilton—Tamiya rules! We all need to remember: Cars don't win races, drivers do. As for all you punks who tinker with stock motors, get out of our hobby and go mess up something else. (This was going on in the mind of George Washington as they took his picture for the \$1 bill.)

Will there be a Project Fox, Part Two? You could concentrate on a lighter chassis. Is it possible to use a belt drive in the Fox? Will the "Hot Tracks" article ever cover any off-road tracks? Are you going to do a track report on the C&M 1/8-scale Cobra? Why do those bogus punk magazines try to compete with yours? And last, but not least, does Chris Chianelli really have purple hair? Till then, "Kick !&*, go fast, and don't look back.

BRYAN BALAK
Wiesbaden, Germany

Bryan, we've also been unable to find Brimrod's address, but their shocks are/were very expensive with limited availability.

Now, to your questions: If you're looking to make a "Sly Fox," there are many good shocks on the market, and some weren't available when the Sly Fox article was written. A set of Kyosho Gold shocks should do nicely. In the near future, Rich Hemstreet will do a follow-up Fox article using a new high-grade aluminum Sassy Chassis replacement unit. We don't know of any available belt-drive systems for the Fox.

We're always looking for off-road tracks for our "Hot Tracks" feature, but the on-road track owners are doing a better job of providing us with pictures. So get it together, you off-road-track owners!

We have a number of 1/8-scale electrics in the works, including C&M's. It should be in our next issue.

As for those punk magazines you refer to, in the words of World Champion Free Diver, Enzo Molinari, "Let them try!"

As for my hair, some have said it's purple, but I just don't know what it is anymore. I'm sorry nobody else has been able to clear that one up lately.

CC

We welcome your comments and suggestions. Letters should be addressed to "Letters," *Radio Control Car Action*, 251 Danbury Road, Wilton, CT 06897. Letters may be edited for clarity and brevity. We regret that, due to the tremendous number of letters we receive, we cannot respond to every one.

READERS' RIDES

Hey! We've changed the Readers' Rides introduction! In honor of the new decade, we thought we'd do something different.

Now, welcome to Readers' Rides. This is our way of giving recognition to the unique, innovative—and sometimes bizarre—vehicles that our readers have created. If you want to join the growing ranks of Readers' Rides winners, send us a sharp, uncluttered, well-exposed color photo (no Polaroids, please!) of your car or truck, along with a brief description. Who knows? The Ayatollah of Radio Controlla might pick your car.

If your ride is chosen, you'll receive a one-year subscription to Car Action, or we'll extend your existing one. You'll also be eligible for the second annual "Readers' Ride Car of the Year Contest" in the fall of 1990. Send your photos to Readers' Rides, R/C Car Action Magazine, 251 Danbury Rd., Wilton, CT 06897. Be sure to include your address and phone number, in case we need to contact you!

MATCHING SET

Mark Neubauer of Maineville, OH, must be commended not only for his flaming Clod, but also for that incredibly detailed 1/10-scale brick colonial house in the background. Note the static model of a Honda in the double garage. Incredibly detailed work, Mark!



JAMES BROWN'S HOT-RODDER

Oklahoma City has its very own James Brown, and he races around in a McAllister 34-inch, three-window coupe. The creative Mr. Brown not only added wires, distributor and blower belt, but he also used polished, full-scale, auto freeze plugs to make the moon caps. If you look very closely, you can see the fast-food tray, complete with Coke bottle and box of Cracker Jacks made from balsa, hanging from the window. Watch out! There are dice hanging from the rear-view mirror! James also claims this

loaded Ultima/Rod "has taken numerous TQs and first places." James, with a ride like this, I'm sure you "feeeeeeeel good!"

MODERN ART, OR WHAT?

San Francisco's Mario Abad submitted this photo of his colorful JR-X2. This must be a West Coast phenomenon, because we haven't seen anything like it on this coast. Could Mario be a budding Jackson Pollack?



THE RIGHT STUFF

Dave Semanik of Parma, OH, claims his Killer, a Parma Reatta Funny Car equipped with a 63,000rpm Black Magic motor, a Novak speed controller, a Firefox 10-cell 2/3 sub-C pack and a Futaba Magnum Jr., has "just the right stuff to run in the low 2 seconds." Anyone in his area care to challenge him?

DON'T BACK DOWN

This tenacious tank was built by Alton L. Dobbins using a Tamiya Tiger Tank and a Blackfoot body. The model weighs just over 9 pounds with a 7-cell battery pack. A Futaba MC-111 electronic speed controller has worked out well, considering the need for reverse. Alton says, "An Astro Turbo really makes it move," so much so that: "With all the power of the Astro motor, I can put air under the tracks if I use full throttle when the tank goes over cars on a crushing pass."



.....



NOLLS ON A KNOLL

Tom and Dustin Noll are a father-and-son off-road team from Waukesha, WI. On the right is Dustin's car: an extensively hopped-up Raider with an Apache Warrior body—a good-looking machine. On the left, what we have is a...well, according to Dad, it's the result of rebuilding a used Optima from the belt drive up and topping it with a Jeep body. As Dad puts it, "It ain't the prettiest thing, but all eyes are on it come race time." Well, Tom, it may warm your heart to know that it's Crazy Chris Chianelli's favorite. Like your Optima/Jeep, Chris is also a little whacked out.

.....

LOW-SLUNG FUN

Charles Spaulding took this excellent photo of Frank Beane's WCM Super Modified; all three are from Candia, NH. Frank made a few changes to the car, e.g., moving the roll cage back, adding nerf bars and mounting the battery and fuel tank to the left side. Frank also scratch-built the front of the body. Charles, your photo is really very good. If you and Frank want to work on a project for *Car Action*, drop us a line and we'll talk.



.....

BEACH BRUTE

With a LeMans 360 PT, ball bearings and a Thorp diff and axles, Joe Campoli's Big Brute is ready to kick sand in the grill of any lesser monster truck that asks for trouble. The photo was taken against the beautiful backdrop of Lake Michigan in St. Joseph, MI.



TRUCK STOP

by DAVE SPROUL

PISTON-POWERED PULLERS

WELL, HERE WE are at the "Truck Stop" again. Kind of makes you feel as though you just got off the interstate, doesn't it?! Enough humor! Let's get down to business! This month, I'll bring you up-to-date

a modified rear suspension with solid struts and a stretched Nissan body. I'll keep you informed as more information becomes available.

Dropping in scale, we find P.T. Engineering's* 1/6-scale, 2WD, stretched Chevy S-10 puller.

This truck is 31 1/2 inches long, 10 1/2 inches wide and weighs in at 25 pounds, and power is supplied by a 35cc Mountain Motor that produces 2hp. Wow! This is the engine that's in my 1/4-scale funny car! P.T. also offers a 1/6-scale pulling sled,

and both products should be available when you read this.

In 1/10 scale, we find Advance Engineering's* Full Pull 1 2WD chassis with a '40 Ford Pickup body, all-steel gears, full ball bearings and aluminum chassis. This is a short-wheelbase model, and I hear that a long-wheelbase Full Pull II is in the works.

QRS introduces a new aspect of racing to 1/4 scale with the Stadium Racer.

on some of the newest trucks out there. With so much activity and new "cottage" industries, this is difficult, but I'll try.

In the September '89 issue of *R/C Car Action*, "Inside Scoop" treated you to a picture of Design One's* 1/4-scale monster truck, and I have more information: It's powered by a 100cc engine and includes 4WD and 4WS, which is accomplished by using hydraulics. Its wheels and tires come from an ATV, and the Ford 150 body is made of fiberglass. There's also a 1/4-scale 4WD dual-engine pulling truck available, and I've been told that a 1/4-scale pulling sled is available on special order. The sled is an engineering masterpiece and should be able to handle a couple of thousand pounds!

QRS* sent me information on its 1/4-scale Toyota Stadium truck. Actually, you can choose from Toyota, Nissan, Jeep, Dakota and Chevy S-10 bodies. The QRS Stadium Truck comes complete with a 22.5cc gas engine, a quick-change rear end, an on-board recoil starter, disc brakes and ball bearings.

Also from QRS comes the first production 1/4-scale 2WD Puller! Based on its Stadium Truck chassis, the Puller includes



This 1/4-scale monster truck from Design One has sparked a lot of interest.

From Great Planes Model Distributors* comes the C&S Manufacturing Wedge 2WD rolling chassis. Designed as an entry-level open-class puller, it has a stamped-steel frame, an assembled gearbox, an adjustable wheelbase and a motor

mount.

Rumor has it that another company (one well-known in the hobby industry) is working on a 2WD puller chassis, and I'm sure that Parma International* plans to release a stretched '89 Chevy Silverado body, and that a special puller body is in the works.

According to *R/C Car Action's* survey, monster truck activity involves 43 percent of readers, while truck pulling scored 12 percent and drag racing 4 percent! Come on, manufacturers! Where are the truck-pull products? This survey shows that truck-pulling has more than twice as many participants as drag racing, yet the market is practically flooded with drag products, but not with pulling products. Why? Truck pullers are starving for the support of manufacturers; give them the products; they'll buy them!

If you've experienced steering-knuckle breakage on the Kyosho* Big Brute, Hi-Rider, or Double Dare, you'll be pleased to hear that not only has Kyosho made them stronger, but you can also now buy them separately from the parts pack. For \$5.95, part no. KYOC4385 will get you four new steering knuckles (two left and two right). This is a real step in the right direction: small replacement parts that can be bought separately, and not just in a bag full of other parts you don't need. I'd like to see more of this from all manufacturers.

Well, I think that wraps it up for now. Keep on pulling, trucking, crushing, or whatever you like.

*Here are the addresses of the companies mentioned in this article:

Design 1, 2028 Camino Loma Verde, Vista, CA 92084.

QRS, 257 Garner Valley, Mountain Center, CA 92361.

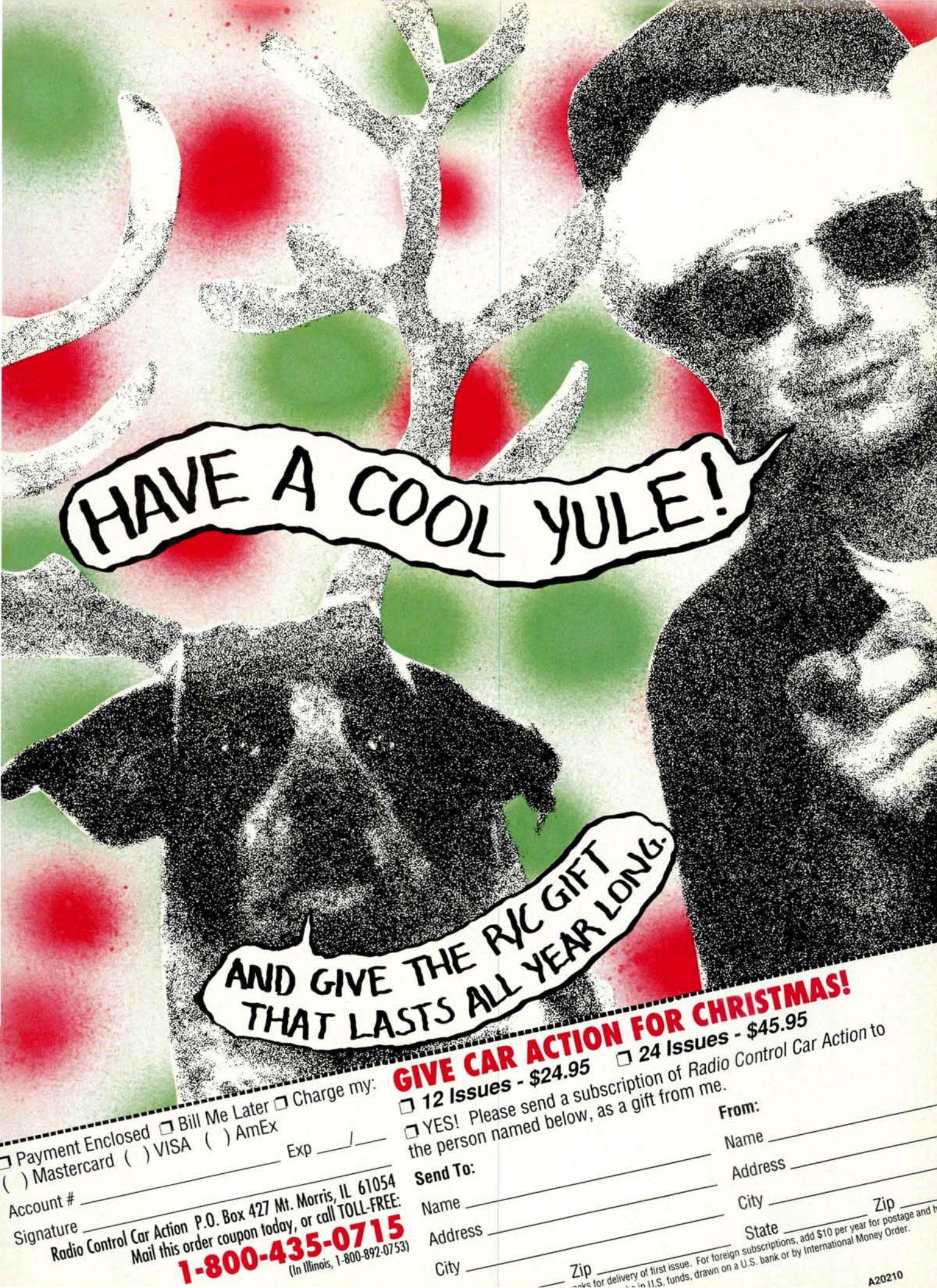
P.T. Engineering Co., 516 Parkwood Dr., Bellefontaine, OH 43311.

Advance Engineering, P.O. Box 766, Woodland Park, CO 80866.

Great Planes Model Distributors, 1608 Interstate Dr., P.O. Box 4021, Champaign, IL 61820.

Parma International, Inc., 13927 Progress Pkwy., North Royalton, OH 44133.

Kyosho/Great Planes Model Distributors.



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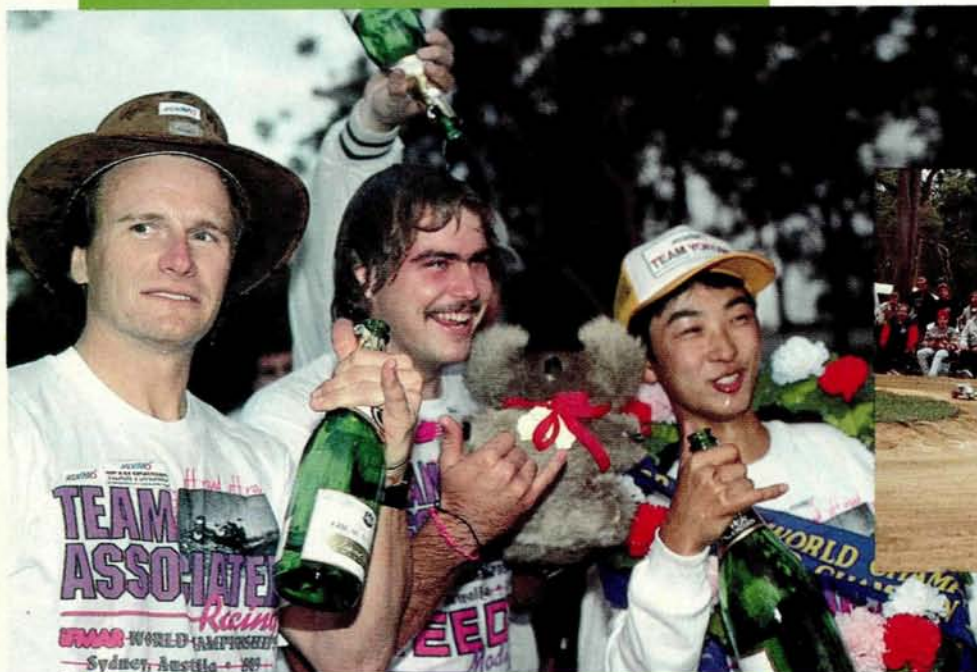
An Aussie native scopes out the action. No, this is not Rick Houle!

FIRST REP

by RICK HOULE

G'DAY MATES! Your intrepid, traveling reporter greets you from Australia, the land "down under." Now that the World Championship titles have been decided, I can kick back and enjoy a little of this beautiful land of strange marsupials!

Masami Hirosaka, the 19-year-old wonder kid of the Yokomo empire, was the undisputed king of the hill in both the 2WD and 4WD classes. I swear he can't be human: He drives his car like a robot, as if the car were on rails; lap after lap, he enters each turn on exactly the same line! Rumor has it that Masami, who's a shipping clerk at the Yokomo warehouse, practices two hours each day at his home track. At the completion of the 4WD finals, his overall score (which is computed by combining the best two finishes of the three final runs) showed him to be a full lap ahead of the en-

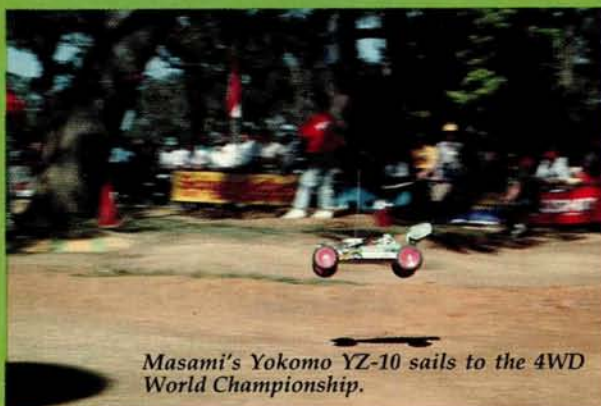


From left: Cliff Lett, Jammin' Jay Halsey and Masami Hirosaka celebrate Team Associated and Yokomo's success at the Worlds.



MASAMI

FRAGILE



Masami's Yokomo YZ-10 sails to the 4WD World Championship.

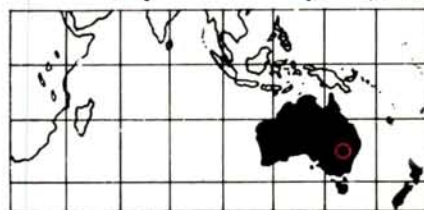
tire field!

Team Associated spared no expense in its concerted bid for a 1-2-3 sweep in the 2WD Class. Efforts made on this prototype car really paid off: Masami, Jay Halsey and Cliff Lett captured the 1st-, 2nd- and 3rd-place spots, respectively, with the new "stealth car," as many drivers called it. Each of the top three Associated drivers amassed 34 laps, and the closest threat to the trio came from Team Losi's Mike Dunn, who also turned in 34 laps with his JR-X2. As Rick Vehlow turned in 32 laps for 5th place (also armed with the stealth car), American drivers cap-



PHOTOGRAPHS
DO NOT BEND

FROM THE AUSTRALIAN OFFROAD WORLD CHAMPS!



Along with the YZ-10, this Associated prototype car made this the year of Masami, as he took the 2WD crown as well.



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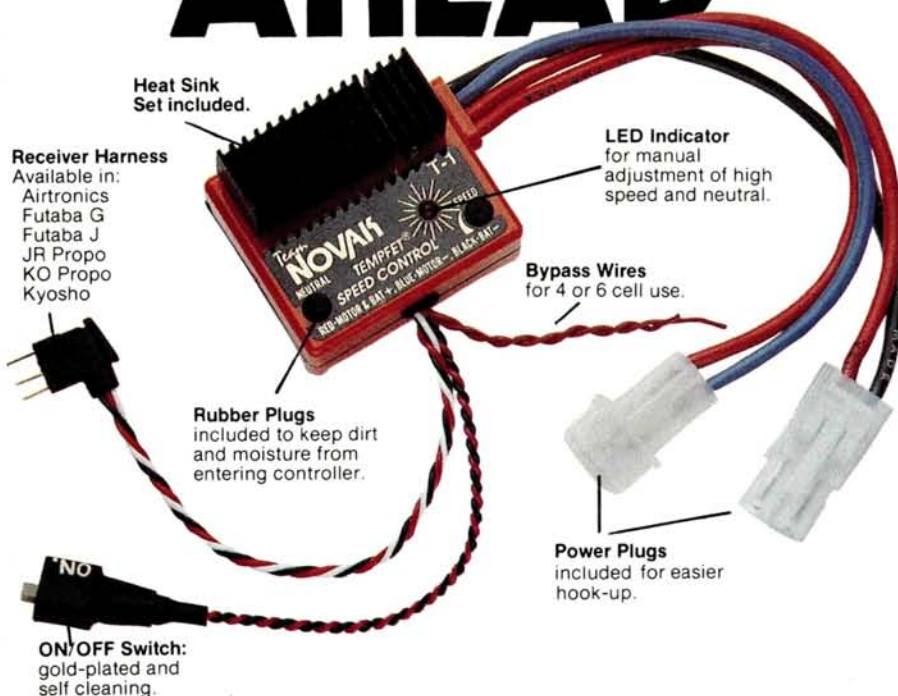
Kyosho pulled out all the stops to try to retain its World Championship, but this little guy just wasn't enough.

tured four out of the top five positions in 2WD. British drivers Jamie Booth (who piloted the new Schumacher Top Cat) and Craig Dreschler (who drove an RC10 Graphite) claimed the 6th and 7th spots, respectively. The last three positions also belonged to the Americans: Jack Johnson came in 8th with a JR-X2; Joel Johnson placed 9th driving an Ultima; and Ron Rossetti took 10th with a JR-X2.

The coordinated efforts of Associated and Yokomo paid big dividends in the 4WD contest, as the potent combo again netted five of the top 10 positions. Though

basically the same car, the Japanese referred to their Yokomo rides as "Super Dogfighters," while their American teammates called their cars "YZ-10s." No matter what they called it, the Yokomo car took 1st and 2nd places, and it just missed a 1-2-3 sweep by less than 2 seconds! Associated's Butch Kloeber came closest to Masami's 36 laps by turning in 35 laps; this earned him 2nd place overall in 4WD. Rick Hohwart foiled the Associated/Yokomo blitz with his Kyosho Lazer: He claimed the 3rd spot with his combined time of 34/10.15.84, as he edged out Cliff Lett's time of 34/10.17.39

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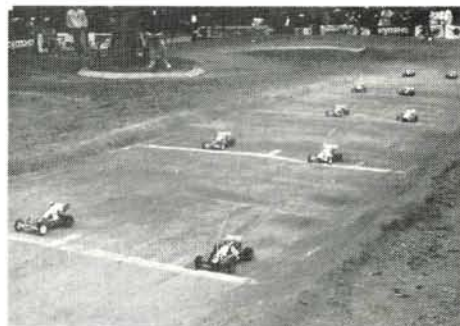
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WORLDS REPORT

for 4th place. The new Schumacher Pro Cat made a healthy showing: West Germany's Jurgen Lautenbach and Great Britain's Phil Davis drove their Cats to 5th and 6th places, respectively. Mike Dunn (USA) placed 7th with his AYK Pro Radiant; Satoshi Kayano (Japan) claimed the 8th spot with a Dogfighter; Rory Cull (Great Britain) drove his Pro Cat to 9th place; and the 10th position went to Jay Halsey (USA) with another YZ-10.



In places like Europe and Australia, "track maintenance" means something entirely different from what it means in the U.S. The St. Ives track was groomed at the end of each day, and it was left virtually untouched throughout the following day's racing activities (unless the surface suffered such serious damage that repairs were absolutely necessary). As the day wore on, racers had to deal with the constant deterioration of the track.

The event's biggest controversy centered on the oversize wheel-and-tire combo used by Associated and Yokomo drivers. Apparently, the oversize wheel (about 2 3/4 inches, compared with the more conventional 2-inch wheels), coupled with a secret new rubber compound, enabled the Yokomo cars to handle the track's chuck holes and loose dirt better than the other cars could. Don't expect to find these controversial wheels and tires at your local hobby store, however: They aren't legal under ROAR or NORRCA rules, so they're useless in the United States.

Well mates, what started out as a simple overview has almost turned into a full-blown race report. There's simply too much information to cover in this article, but I promise to bring you a complete story, with news of all the juicy behind-the-scenes happenings and race action, in next month's *Car Action*. Until then, steer clear of "bargers," and don't be a "yobbo"!

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FEATURES:

Quarter Scale Nats



**What's New for 1990
Roots of R/C Part II**

COLUMNS:

**On the Scene
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Inside Scoop**

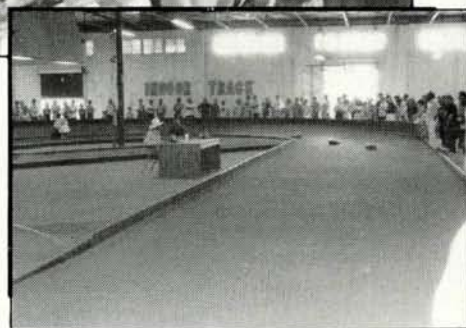
TRACK REPORTS:

**WCM Super Mod
Hirobo Invader**

HOT TRACKS

Welcome to "Hot Tracks," which, each month, will feature an outstanding track. To qualify, send in some high-quality, black-and-white photos of your track, along with a paragraph (approximately 500 words) outlining why your track should be chosen. Send your entries to Hot Tracks, Radio Control Car Action, 251 Danbury Rd., Wilton, CT 06897.

Indoor Track, Richland Hills, Texas



YOU KNOW THE old saying, "Everything is bigger in Texas." Well, it sure is, and Indoor Track is a great example! Located in Richland Hills, TX, this 130-foot-long, 80-foot-wide indoor dirt oval is one of the largest in the country. With 15-foot lanes, slight banking and very hard-packed clay, exciting racing action is guaranteed.

The track features: AMB computer lap counting; trackside pit tables with electrical power for 100 racers; private pit suites leased by the month; a fully stocked hobby shop; and a snack bar.

On a typical Friday night, you'll find over 60 racers going at it. On Saturday, more than 80 racers usually show up to take the green flag. There are classes of racing for everyone, with Production, 2WD Stock (6-cell), 2WD Super Stock (7-cell), 2WD Modified, 4WD Open and Monster Trucks.

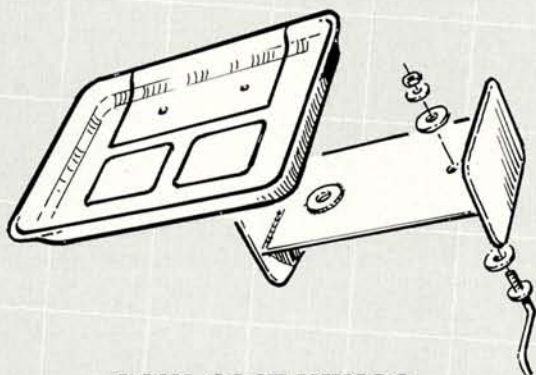
The Indoor Track recently held a ma-

jor race that attracted several big names. Brian Landgraff traveled from California, Rob Cutman came from Pennsylvania, and both raced under the Custom Works Dominator banner. Californians Sean Young and Martin Buchanan raced their Superior SRP-1. These teams did battle for the bragging rights. The results? Landgraff and Cutman finished 1st and 2nd, respectively, with local favorite Phil McKinney taking 3rd.

For more information about this impressive racing facility, contact: Indoor Track, 7119 Burns, Richland Hills, TX 76118. Tel: (817) 595-1189. ■

PIT TIPS

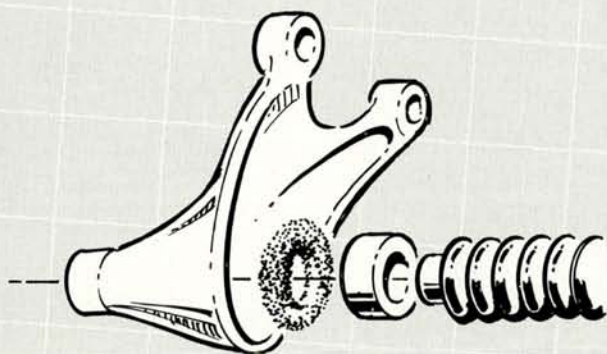
by JIM NEWMAN



LOW-COST WINGS

To make inexpensive wings, foam meat trays can be cut so that the flange provides the necessary upturn at the trailing edge. Use the trays for side dams, too, and attach them to the wing with 5-minute epoxy glue. Note the thick, cardboard, reinforcing washers, which are glued above and below the wing where the threaded mounting wire emerges.

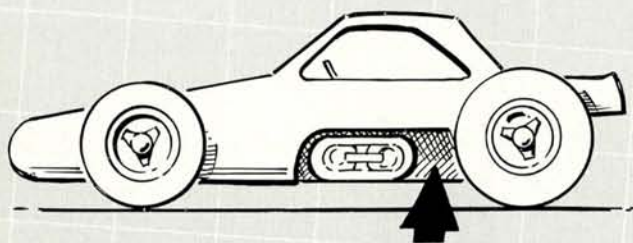
Albert Lee, Edmonton, Alberta, Canada



HALF-SHAFT DIRT SEAL

A common problem on the Frog is wear on the half-shafts caused by dirt under the boot in the rear arm. To solve this problem, make a small dust-seal ring out of a thick, furry, pipe cleaner; hold it in place with a short piece of rubber hose.

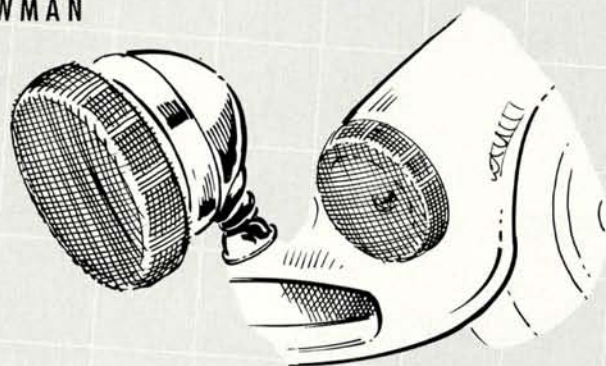
John W. Kelly, Marlton, NJ



OPTIMA BATTERY ACCESS

If you cut away the sides of the car's body, you'll be able to swap batteries without having to remove it. This saves time, and you'll be less likely to lose body clips. This might work on other cars, too. Check yours.

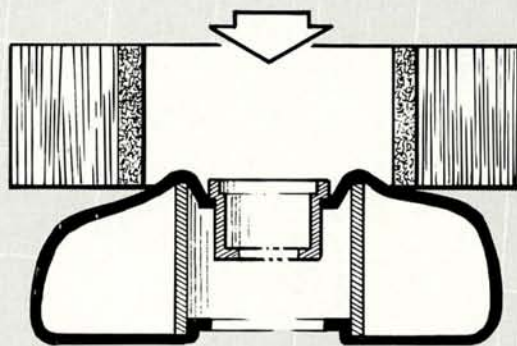
Kazu Munakata, Bellevue, WA



HEADLIGHT PROTECTION

Many racing cars and off-road cars have their headlights and roof lights protected with wire mesh grills. You can simulate these grills by cutting circles of window-screen material and forming them around your car's lights. Secure them with strips of clear adhesive tape.

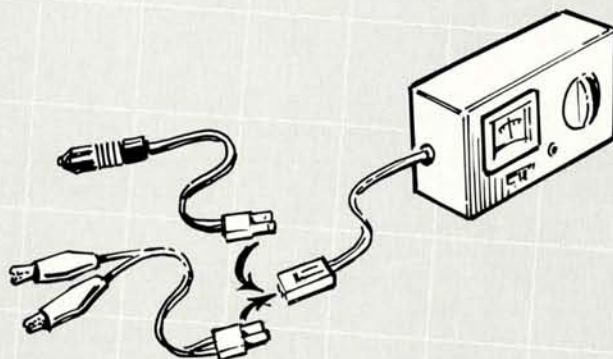
Chris Eden, Ridgely Park, NJ



BIG BEAR TIRE FITTING

Some drivers find it almost impossible to assemble these tires and three-piece rims in such a way that all are concentric. Try this: Press a roll of duct tape (arrowed) downward over the tire. This will stretch the center hole and allow the half hubs to be inserted easily.

Curtis Forester, West Bend, WI

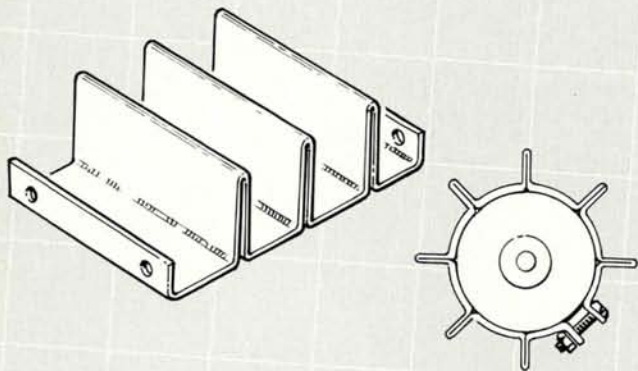


CHARGER-LEAD ADAPTERS

This owner sometimes plugs his charger into his car's cigar lighter, and he sometimes clips it to the car's battery. To do this, he has cut the charger power lead and inserted a plug that will now accept adapters: one for the lighter socket and one with crocodile clips for the battery posts.

Andrew Manzella, Frederick, MD

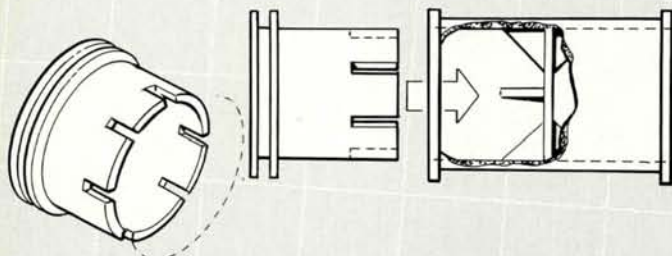
PIT TIPS



HOMEMADE HEAT SINKS

Fold thin aluminum sheet as shown. Using High-Temp Permatex, glue together the double layers that form the fins. When all has set, wrap the heat sink around your motor and secure it with two screws and nuts. (Put a tiny drop of thread-locking compound on the threads.)

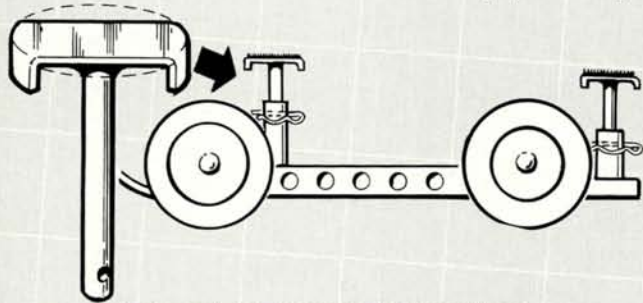
Gary Hoffmaster, Frederick, MD



BLACKFOOT/CLOD BUSTER TIRE ADAPTATION

Now you can use the many Clod Buster tire options on your Blackfoot. Cut the outer rims off the stock Blackfoot rims; then notch the hub to fit over the webs inside the Clod Buster hubs. Secure them with 1 1/2-inch machine screws and nuts.

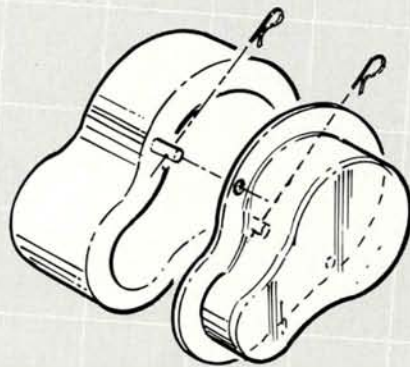
Dennis Tietyen, Milwaukee, WI



CLIP-FREE BODY MOUNTS

These were once the plastic plungers in push-up popsicles. Trim off the sides, then drill the stem to accept regular body clips. Before setting the plungers into the regular body mounts, glue Velcro to the head of the plunger and to the inside of the car's body. Adjust to the appropriate height before inserting the retaining clips. You now have a quick-release, low-drag body mounting that's instantly accessible.

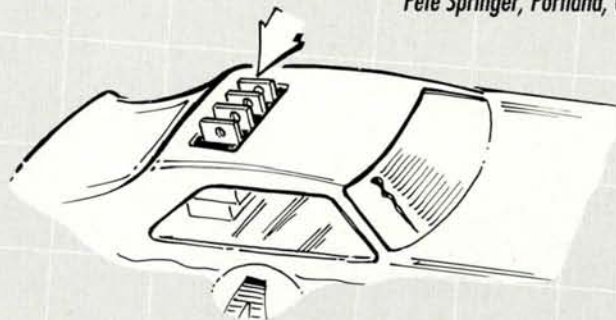
Brandon Etto, Youngstown, OH



QUICK-ACCESS PINION GEAR

This gearbox cover was very simply modified to make it easy to remove. The two 4-40 Allen-head screws were replaced with two cross-drilled headless screws, and the corresponding two holes in the cover were then opened to clear them. Now the pinion gear is readily accessible by pulling out two regular body clips.

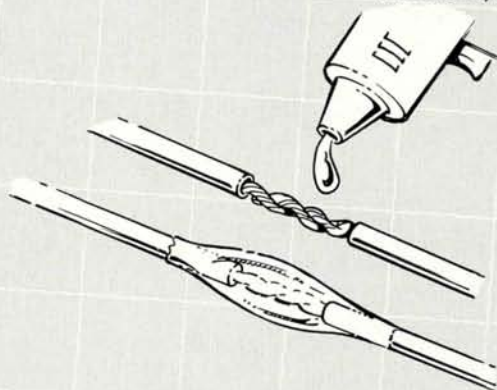
Pete Springer, Portland, OR



HEAT-SINK COOLING

To provide better cooling for his electronic speed controller, Mike cut a neat hole in the top of his car, then he raised the controller on a block of wood so that the heat sinks project into the airflow. You might want to try this on your car.

Mike Roeder, St. Louis, MO



INSULATING SOLDERED JOINTS

After soldering two wires together, instead of using the customary insulating sleeve, Daryel used his hot-glue gun. He ran hot glue over the connection and overlapped the insulation to support and strengthen the join.

Daryel Savage, Oklahoma City, OK



H O R I Z O N

TQ 10

by STEVE POND

SINCE ITS INTRODUCTION in 1984, the Team Associated* RC10 has been the most dominant force in 2WD off-road racing. Starting with the 1985 IFMAR World Championships, it has blazed a trail of victories around

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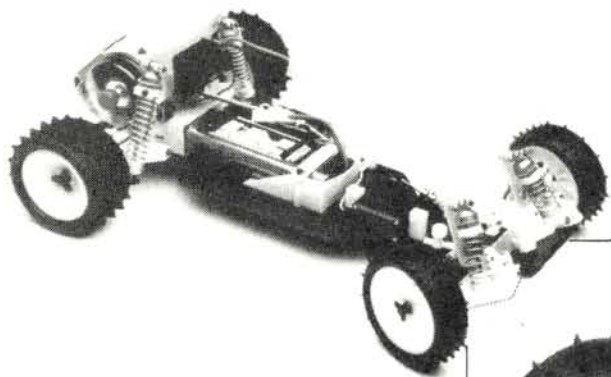
the world. There are many accessories available to further enhance this car's performance, i.e., tires, rims, chassis, suspension accessories and linkage. With all the available performance parts, your RC10 can stay competitive even against the hottest new cars, but the price of these extras can start to add up.



Horizon Hobby Distributors* decided to introduce its own off-road car—the TQ 10. By commissioning Associated



Electrics to supply the components for it, Horizon was able to start with a race-proven design and then refine it.



Left: The TQ 10 resembles the RC10, but has a graphite chassis. The chassis requires a front-to-back battery layout with enough space for the electronics, but not for the larger accesso-

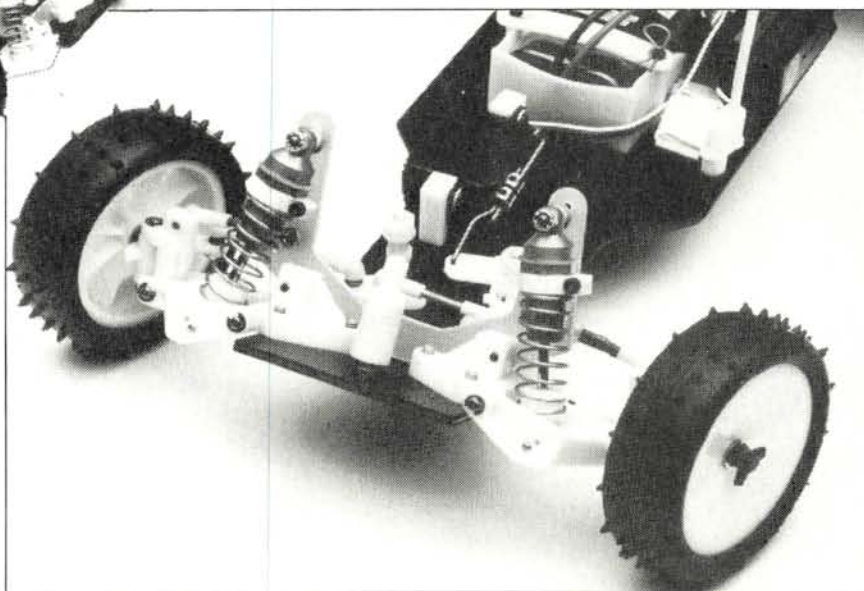
The TQ 10 has virtually all of the same features of the Associated RC10: four-wheel independent suspension; aluminum oil-filled, coil-over shocks; ball differential; a durable 1.83:1 reduction transmission; adjustable camber, front and rear; adjustable front toe-in and toe-out; and glass-filled nylon material for all the suspension components. Unique to the TQ 10 are a graphite composite chassis; 2.1-inch diameter TQ wheels, front and rear; a set of TQ tires and the Associated Side-winder body.

Not included in the kit are the parts that are usually left in the box by performance enthusiasts, i.e., motor, speed control, and other electric components. Omitting these items reduces the cost of the kit and allows the buyer to choose his own accessories. Not bad, huh?

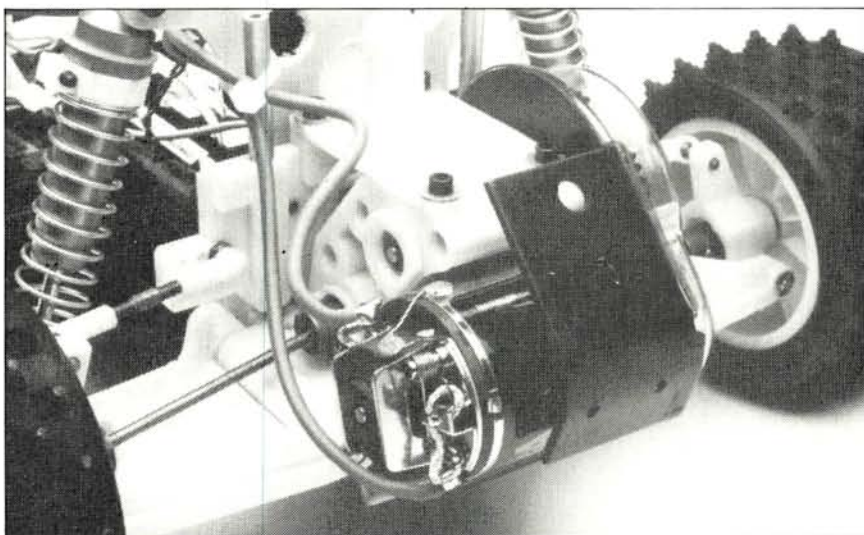
ASSEMBLY: The assembly process for the TQ 10 and the RC10 is very similar. In fact, if you compare their instruction manuals, it would be difficult to tell the difference. Each step is clearly outlined, although some "reading between the lines" is required for top-notch performance.

Start with the front suspension components. The A-arms, mounts, caster blocks, shock tower, steering blocks and upper control arms are all included in this sequence. (Take your time here, since the front-end assembly effects the car's handling.) Make sure that the suspension components don't bind; check for binding by lifting the suspension arms and letting them drop. If they don't drop, use a 1/8-inch drill bit to enlarge the holes through which the pivot pins pass.

The most critical area of assem-



The front end of the TQ 10 is almost identical to that of the RC10, but it has larger, 2-inch wheels, low-profile tires and a graphite chassis.



After changing the brushes and the springs, a Paragon Racing stock motor was installed in the TQ 10. For easier adjustment, a set of Thorp turnbuckles was used in place of the stock linkage.

bly is the transmission, as it has the most direct impact on how the car will handle and how long it will run. Take the time to check and re-check how smoothly the tranny is working; it *will* make a difference.

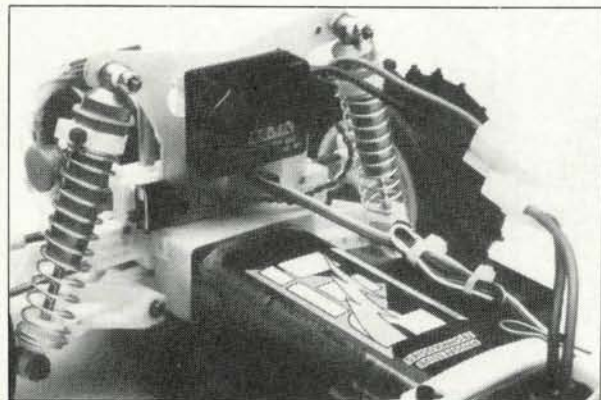
During manufacturing, the metal tranny gears develop burrs, and these must be removed to avoid binding. To smooth them, file the

edges of the metal gears with a fine-tooth modeling file. After you've deburred the gear, you should be able to spin the spur gear freely for about 5 seconds. Even if the binding is minimal, when amplified by 10,000 to 30,000rpm, your run time will obviously suffer. (For more detailed information on how to make a smooth-running

• • • • •

transmission, Horizon offers a booklet called *Tranny Tips*, by Jim Halsey.) Now you can fasten the completed tranny and the rear bulkhead to the chassis.

Assembling the rear suspension



Power for this TQ 10 is provided by PTI 6-cell Sanyo SCR packs and a Tekin ESC 300 PT electronic speed control. To allow easier diff adjustment, a Parma dust cover is used in place of the stock cover.

mounts and arms completes the chassis. To avoid a binding problem here, make sure that the arms move freely.

I used a new Paragon* stock-class motor, which is based on the Yokomo* design and is legal for use under ROAR rules. I chose Tekin's* ESC 300 PT, which is part of its line of Tempfet speed controls, and it's ideal for use with stock-class motors, as well as with mild modifieds in the 2WDs. If you don't plan to run a hot modified, the 300 PT costs considerably less and is every bit as smooth as the best in the business.

A pair of Progressive Technologies* assembled Sanyo* SCR 6-cell packs provides power for the entire electrical system. SCRs have become the standard for running in the stock class, and the durable packaging should ensure a long life. It's a tight fit because of the end caps on the pack, but these end caps allow the wires to bend 90 degrees without being damaged.

The last required accessory is the radio-control system; I use the new Futaba* Magnum Jr. with FP-S132 servos. By flipping the servo mounts 90 degrees, or by changing to the other set of mounting holes that are drilled in the chassis, the TQ 10 should accommodate just

about any servo. The receiver fits into the left side of the battery box with little room to spare, so don't use a system that has a larger receiver, or it will hang off the edge of the chassis. To fasten the receiver to the chassis, simply use some good two-sided servo tape.

Now, all I had to do was to fit the body, but I botched the paint job, and this ruined the original Associated Sidewinder body. Luckily, a nearby hobby shop had a pre-painted Hea-then body from Andy's*, which is designed to fit the RC10 and the TQ 10. With this body mounted, the TQ 10 was ready for racing.

PERFORMANCE: Running the TQ 10 held no surprises. I've built and run four RC10s, so I had a good idea of what to expect with the TQ 10. After the first few runs on the slim, hard-packed track, I got the car dialed-in. Because the track was hard-packed, it took longer to get the car to hook up. I ended up with 30WT oil in the front shocks, 10WT oil in the rear shocks, and soft springs all around. I used the tires that came with the car, just to see how they'd suit this track.

On the hard surfaces, the TQ 10 seemed to push a little through the turns, and this is to be expected, but there are some tuning steps to make the steering more responsive. Adding tension to the rear springs jacked a little more weight to the front end, and this helped, but if you're trying to dial-in the car for the same type of track, be careful not to use too much spring. The soft compound of the TQ-76 front tires also contributed to the pushing, but a harder tire should help. The TQ-20 tires in the rear provided excellent bite on the hard track, and they worked even better during subsequent runs on softer tracks.

The TQ 10 became much more

HORIZON

TQ 10

Type Off-road
Scale 1/10
Sug. Retail Price ... \$239.95 with bushings,
\$319.89 with bearings

DIMENSIONS:

Overall Length 15.5 inches
Width 9.75 inches
Height 5 inches, without wing
Wheelbase 10.75 inches
Front Track 7.75 inches
Rear Track 8 inches

WEIGHT: 3 pounds., 4 ounces

BODY:

Type Off-road buggy
Material Polycarbonate

CHASSIS:

Type Single plane
Material Graphite

DRIVE TRAIN:

Primary Pinion/spur
Transmission Gear drive
Differential Ball differential
Bearings Ball bearings

SUSPENSION:

Front & Rear:
Type Lower A-arm, upper control link
Dampening Oil-filled, coil-over shocks

WHEELS:

Front: Type One-piece nylon
Dimensions (DxW) 2.1x.625
inches
Rear: Type One-piece nylon
Dimensions (DxW) 2.1x1.25
inches

TIRES:

Front Rubber pin-spoke
Rear Rubber block-pattern with spikes

ELECTRICS:

Motor 05/540 (not included)
Battery 6- or 7-cell stick pack
(not included)
Speed Control Electronic (not included)

OPTIONS AS TESTED:

Paragon Racing Stock motor; Tekin ESC 300 PT electronic speed controller; Progressive Technologies 6-cell Sanyo SCR packs; Futaba Magnum Jr. 2-channel radio; Thorp turnbuckle linkage; Parma differential dust cover.

COMMENTS:

The TQ 10 is competitive right out of the box. The graphite chassis brings the car down to the minimum legal weight. The TQ 10 will accept most accessories developed for the RC10. I was disappointed that the car didn't include items like turnbuckle steering linkages; a dust cover that permits quick diff adjustments; or a better servo saver. The next run of TQ 10s will include many of the improvements found on the RC10 Graphite.

aggressive on a well-groomed track, and it went where I directed it. The narrowness of the front end occasionally showed itself in tight turns where it rode up on two wheels.

The car's stability when airborne created a consistent, level flight and an occasional nose dive. You'll have to take some of the jumps under power to keep the nose up; others, you'll have to glide over. This doesn't mean that there's a problem with the design of the car; it's simply something you'll have to get used to.

Acceleration was very good with the stock gear ratio and the Paragon stock motor. Because the motor is relatively new on the market, I haven't been able to run it, but through testing, I've found that it runs strongly enough to keep up with many popular stock motors.

I'm very happy with the TQ 10, although a few more features could have been added to this early version, i.e., turnbuckles, wider front arms and a stronger servo-saver assembly. I have good news, though: Horizon Hobbies told me that the newer version of the TQ 10 will include many of the same improvements that are on the new Associated RC10 Graphite: black idler gears for the transmission (these are stronger and more durable than the current TQ 10 gears) a new rear bulkhead; a front shock tower; wider front arms; and turnbuckle linkage.

If you ever feel the urge to modify the TQ 10 (I don't think this car will need much), there's an endless supply of after-market parts for the RC10, and they can be used on the TQ 10. The TQ 10 gets the double thumbs-up!

**Here are the addresses of companies mentioned in this article:*

Associated Electronics, 3585 Cadillac Ave., Marina Del Rey, CA 90292.

Horizon Hobby Distributors, 3102 Clark Rd., P.O. Box 6029, Champaign, IL 61821.

Paragon Racing Products, 690 Industrial Circle So., Shakopee, MN 55379.

Yokomo, distributed by RPS Distributing, 1655 E. Mission Blvd., Pomona, CA 91766.

Tekin Electronics, 970 Calle Negocio, San Clemente, CA 92672.

Progressive Technologies, P.O. Box 16284, Winston-Salem, NC 27115-6284.

Sanyo Electric, Battery Division, 200 riser Rd., Little Ferry, NJ 07643.

Andy's R/C Products, 466 W. Arrow Hwy., Unit K, San Dimas, CA 91773. ■

TQ 10'S FAMILY TREE

by WALLY DAVID

ASK MOST PEOPLE to name the standard off-road racing car, and which one do they mention first?—the Associated RC10. The car is a former IFMAR 2WD World Champ, and it has countless national and regional titles to its credit as well.

The basic kit comes with an aluminum-tub chassis; oil-filled, coil-over shocks; tough, molded-nylon suspension parts; a mechanical speed control; a stock motor; either ball bearings or Oilite bushings; and high-profile, hard-rubber tires.

For many years, this was the way to go, but if you were *serious* about racing, you had to scrap many items in the kit. The mechanical speed control (probably one of the best on the market) was usually replaced with an electric speed control; the stock tires and wheels were almost al-



ways swapped for low-profile ones, and an alternative motor was used. Soon, one-piece graphite chassis became popular, because graphite is lighter and more durable than the aluminum tub.

Now, Horizon Distributors has released the TQ 10, which is basically the same car as the one sold by Associated, but it has a graphite chassis and new, low-profile, TQ rims and tires. The TQ 10 doesn't come with a speed control, a motor, or ball bearings.

The introduction of the Associated RC10 Graphite has created some confusion. Associated's new RC10 comes with a graphite chassis; TQ rims and tires; totally new A-arms; graphite shock towers; in-line front axle and steering blocks; universal swing shafts; turnbuckle tie rods; black Delrin idler gears; and a new rear bulkhead for better suspension geometry. It's available with Oilite bushings or ball bearings.

Horizon has told *R/C Car Action* that most of the updated equipment will be included on future shipments of the TQ 10. We'll have to see where it goes from here. Stay tuned!



INSIDE SCOOP

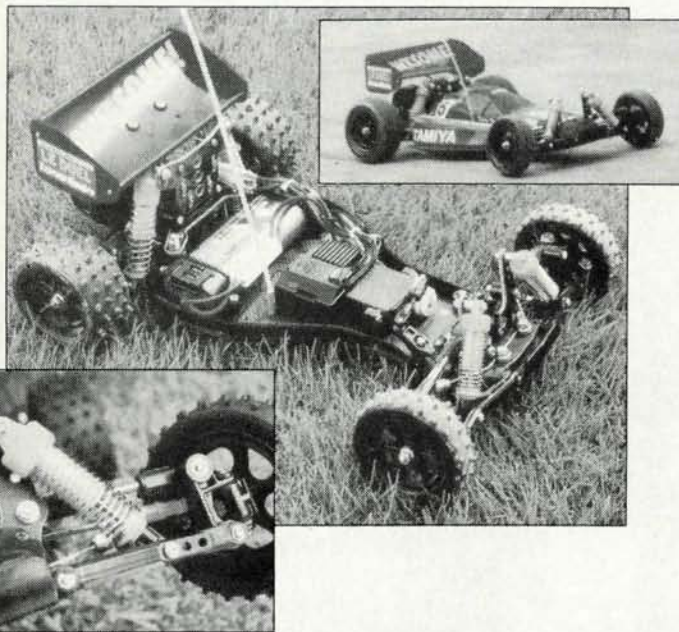
by CHRIS CHIANELLI

The R/C CAR industry is rapidly advancing, with new products being offered at a head-spinning rate. So, I'll make manufacturers nervous, but feed you R/C squirrels who are hungry for info, by bringing you a special report on security leaks and "late-in" items. Here goes!

ARE PLASTIC BUSHINGS ON THE WAY OUT?!!

Well, at least they are on all Kyosho monster trucks—or so I've been told. Starting with the Big Boss, Oilite bushings will be standard equipment on Kyosho truck kits. I've also been told that, in the near future, shipments of older trucks (e.g., the Big Brute and the Double Dare) will also arrive with Oilites on board. For those of you who were stuck with a

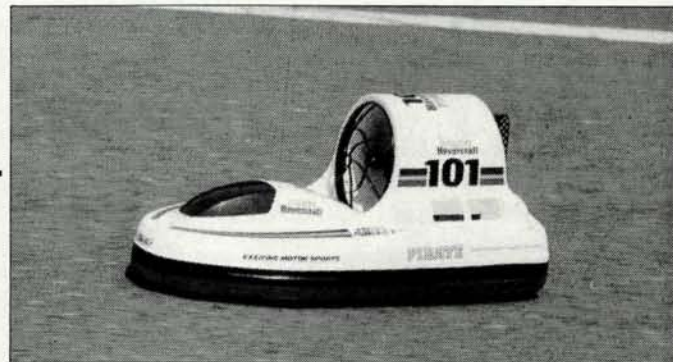
plastic-bushed kit, don't worry: Great Planes is making Oilite bushing sets available for all its trucks at a very low price—an excellent customer-service move. It has been rumored that the retail price will be \$1.98; how does *that* sound?! The whole idea seems like a huge step in the right direction—a step I think all kit manufacturers should take.



NEW TAMIYA 2WD CONTENDER

Here's a first look at the car Tamiya is touting as its new, all-out 2WD car for the competition market. Rumor has it that the chassis is graphite and that it borrows a ball diff from the Egress, but these reports are

unconfirmed. There's no word, as yet, about whether it will come through with metal shocks or not; we hope it will. The name of the car is the "Astute." I wonder if that means it's a well-read racer?



HOVER LOVER

Here's a single-motor hovercraft—the Pirate—from Nikko, a company known to 1/10-scale electric-car fans. Like full-

scale hovercrafts, it can travel across smooth land just as easily as across water.

TURBO BURNS

It seems that there's no end to the "turbo" phenomenon, and the word "Turbo" will soon be found in front of the word "Burns." This latest version of the Burns will include: full ball bearings; larger shocks;



longer suspension arms, wing and mount; rear stabilizer bar; steel drive gear; and new body, muffler, low-profile wheels and side-guards.

1/4-SCALE HOT-RODS ON THE WAY

Through the grapevine, we've been told that Winner's Circle Manufacturing (better known as WCM) has launched a new division (as yet unnamed) that will manufacture 1/4-scale street rods. These cars—a '34 Ford 3-window coupe and a '34 Roadster—will bridge the gap between the 1/4-scale racers and the full-scale hot-rod enthusiasts around the world. Accord-

ing to GLD Racecars (a 1/4-scale dealer in our area), each of these new cars will be available with Tru-Spoke wheels, a Skellinger quick-change rear, a drop-front axle, a chrome grill and a hood that opens so you can see the engine. They'll also be available with or without fenders for a completely stock or a custom street-rod look.

NEW CARS FROM CUSTOM WORKS

Custom Work is allegedly working on an all-new 4WD dirt-oval car that has many improvements over the current Dominator. A 2WD dirt-oval machine is part of the same project.

CLARIFICATION

To clarify the results of the JG Dirt Oval Championships: Erik Soderquist, driving an SRP-1, TQ'd in the 4WD Modified Class. Curtis Strawn won the overall 4WD title, also driving an SRP-1.

Keeping the industry BUGGED, I'll see you next time—or sooner, if I catch you in my spyglass!

CC

READERS' RIDES

CAR of the YEAR!

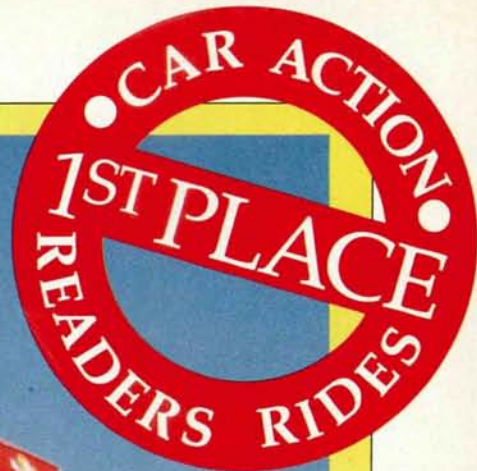
We picked the HOTTEST rides of the year!

by RCCA STAFF

IN THE MARCH '89 issue of Radio Control Car Action, we began "Readers' Rides." It features cars, trucks, or any other R/C vehicles that are built and owned by our readers. Not just any car can get into the pages of "Readers' Rides": Only a select few! Their vehicles are unique, sharp looking, well photographed, or simply mind-boggling.

To kick off the new year, the editors of Car Action decided to pick a "Car of the Year" from the vehicles that have been featured in "Readers' Rides."

From the photographs, the editors picked their favorite rides and produced a list of three possible winners. To determine the number-one ride, however, we had to see the vehicles in person. So what did we do? Well, it would take a great deal of time and money to fly out to see each of the contenders, so we did the next best thing: We had them (the vehicles, that is!) shipped here. We gave the cars a good once-over, and here's what we ended up with:



LARRY MATICS, HILTON HEAD, SC

The awesome-looking Orange Crush tank truck built by Larry Matics of Hilton Head, SC, is the undisputed winner. Delayed by Hurricane Hugo, this was the last of the three finalists to arrive. When we opened the box, the decision was unanimous: This was the winner for 1989!

The Orange Crush is based on the Tamiya 1/16-scale German Leopard R/C tank. This masterpiece was created with a great deal of custom work on the tank's chassis, an exquisite paint job and superb detail work. Contrary to the original write-up in the August '89 issue of *Car Action*, the body shown on the Orange Crush is the original, injection-molded-plastic, 1/12-scale, Dodge van body for the Tamiya Lunch Box, and its wheel openings were filled with body-shop materials. (Larry is a body man at a Mercedes dealership; this might explain his painting talents!) The body and the tank chassis were sprayed with a sharp-looking orange lacquer paint that's buffed to a near-mirror-perfect finish. Inside the Orange Crush are the stock Tamiya tank components, including a pair of RS 540S motors. Supplying power to the motors is a Futaba MC112B electronic speed con-



troller and a 6-cell 1200mAh battery pack.

Larry, congratulations on a job well done and on winning the First Annual "Readers' Rides" Car of the Year Award. Larry tells us that the \$500 cash prize will be used to soup-up his tank. Among other things, he plans to add some hot motors that will really make this baby go!

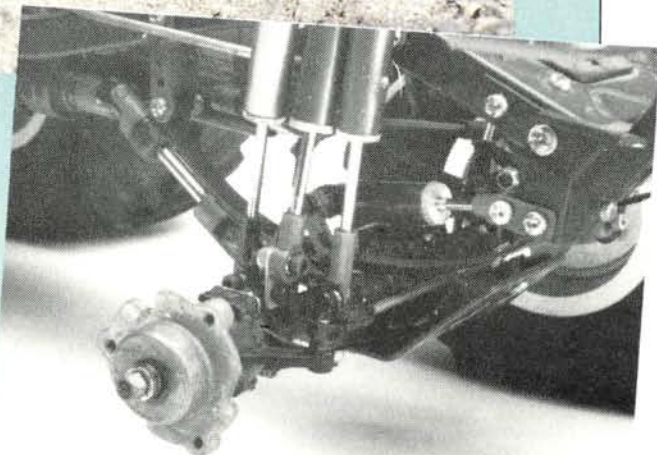


JOHN RATHJEN, HONOLULU, HI

A \$250 check and a hearty handshake goes to our 2nd-place finisher, John Rathjen of Honolulu, HI, for his awesome Bruiser monster truck. John stripped his Tamiya Bruiser and started from square one. He ended up with a set of custom-made, aluminum wheels to fit the Clod Buster tires; three shocks at each corner for up-and-down dampening; a pair of kicker shocks, front and rear, to dampen the back-and-forth motion of the axles; a front-steering stabilizer to take the sting out of the hard bumps; a machined-aluminum bash plate on the front axle; and a truss that supports the rear axle. The leaf springs were re-arched to lift the chassis, and the body received an additional lift to fit the larger tires.

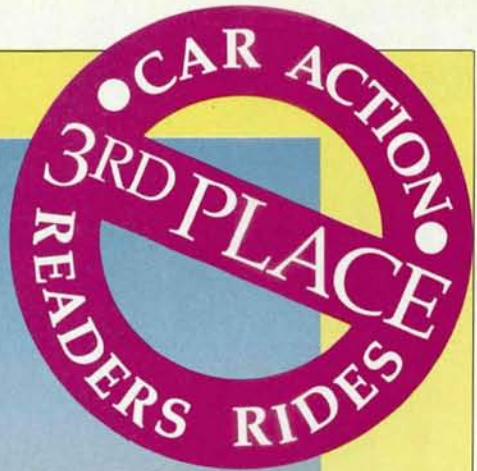
The ideas for these mods came from changes John made to his full-size Toyota pickup! Anyone who has ever toyed with modifying a full-scale truck knows that the mods made on John's R/C truck are the changes you'd find on the big ones.

Congratulations, John. Keep up the good work!



Part of what makes John Rathjen's Bruiser so interesting are the modifications he made to the suspension. The front and rear suspension have three oil-dampened shocks and a kicker shock for each wheel. The front end also includes a steering stabilizer that's attached to the custom-made bash plate.





JACK KRIEGER, EASTON, PA

Our 3rd-place finisher comes from the Wally World of dirt-oval racing: Easton, PA. Having recently recruited Wally David from southeast Pennsylvania, we have some idea of this area's mania for dirt-oval racing. Evidence of this is Jack Krieger's RC10 Modified Mudbus.

The sharp-looking body on Jack's RC10 is a Steve Weller-built Mudbus made of sheet polycarbonate to fit his RC10 chassis. Front and rear bumpers from Big Boy Toys protect both ends of the car from damage, and a pair of nerf bars (also from Big Boy) keep the competition from getting tangled in the tires.

Speaking of the tires, this Mudbus includes the standard fare for dirt-oval racing: Advance Chevron pattern tires are mounted on 1/8-scale Advance aluminum Mini-Mags. For power, the car uses a

stock motor and a 6-cell SCE battery pack. With his \$150 3rd-place prize, maybe Jack will move up to the modified class next season!

Congratulations to all the winners of this year's "Readers' Rides" Car of the Year contest, and to those of you whose cars have been featured in the monthly section. We're very pleased with the response we've had over the past year, and we plan to continue this section so that all the world can witness the talents of our readers.

If you have some wild ideas sitting on the back burner and are disappointed to see that we've chosen a winner for this year, fear not: We plan to pick another winner at the end of 1990, so keep sending in your "Readers' Rides" photos. Maybe next year, *you'll* win the Car of the Year Award!

EVERYMAN'S ENTRY

By choosing 15-year-old Greg Stogren's Monster Beetle as our Reader's Ride of the Year, honorable mention, we salute the typical "Readers' Ride" entrant. Greg's Monster Beetle is neat and well painted, and the time and care that went into it are obvious. His Big Bug uses Big Bear tires on Pro-Line chrome rims, a JG front bumper, a Twister stock motor and a Futaba Magnum Sport radio.

Greg typifies our young readers who, with considerable effort, produce really sharp-looking ve-

hicles. Receiving hundreds of photographs each month, we conduct an extensive selection process to determine which vehicles will be shown in the magazine. Greg's Monster Beetle is typical of the great rides we see the most of, and that's why we chose to honor him here. The \$100 prize should help Greg in his quest for an electronic speed control.

We hope Greg inspires all of you back-yard modelers to keep on sending in your entries. You're all *very much* appreciated!

THE MACK IS BACK!

MONSTER



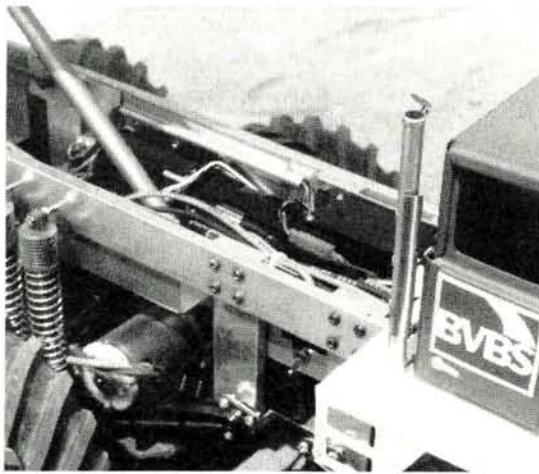
MACK

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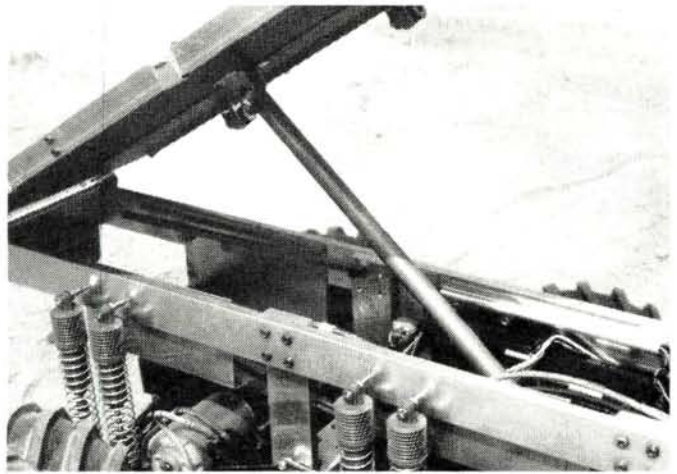
by DAVE SPROUL

WHEN YOU LAST saw the Monster Mack in *R/C Car Action* (September '89), it was one awesome machine. Well, it still is; but even more so. The truck's creator and owner, Jon Freed, decided that it





Scale exhaust stack was handmade from aluminum, including its working flapper! Note the heat shield and mounting straps.



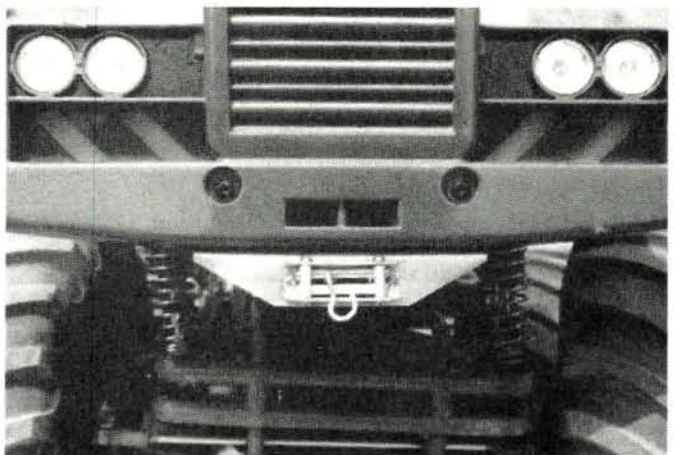
The new "hydraulic" ram lifts the flat bed. The round, black box at the rear of the frame is a back-up alarm beeper, and this should make 1/10-scale pedestrians very happy!

needed even more realistic details, so a few changes were in order.

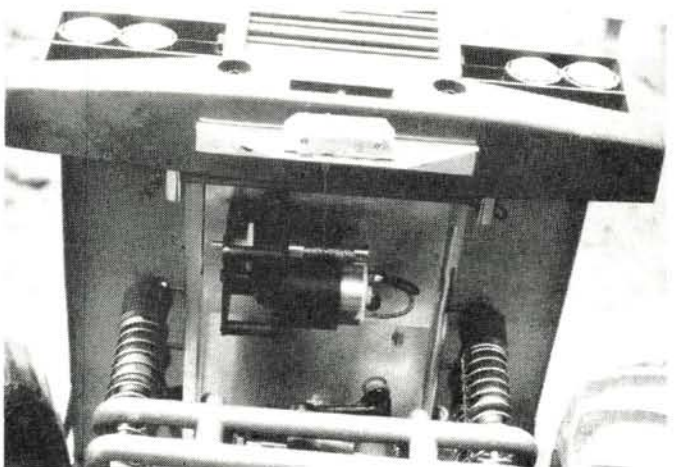
Starting at the front, Jon added a winch to pull this hulk out of trouble (as if this 6WD beast would really need it! The winch would be better used assisting lesser trucks!). Next in line was a custom exhaust stack behind the cab. This was made with aluminum tubing and aluminum sheet, and it includes a heat shield, mounting brackets and a working flapper—all hand-formed!

At the rear, a back-up alarm beeper warns pedestrians when this monster is in reverse, and the hinged flat-bed has been updated with an automatic lift assembly. This system is really "trick"! A "hydraulic" cylinder was made of K&S brass tubing, and the bed is lifted by a long spring that's inside it. The bed is lowered by an electric winch motor that pulls a cable that runs up through the center of the cylinder. The lifting mechanism is controlled by a toggle switch on the frame.

To complete the modifications, the Clod Buster wheels have been painted red and yellow to match the body and the full-size construction truck after which it was modeled. By the way, in the first article, we erroneously stated that the Mack cab came from an old Tonka toy truck, when, in fact, the cab was actually an old Buddy L toy Mack

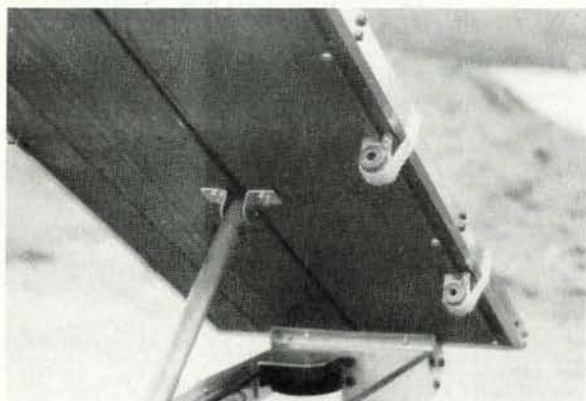


Shown are the winch-cable guide and mount installed under the front bumper. The guide was constructed using aluminum sheet and tubing, and the rollers actually worked!

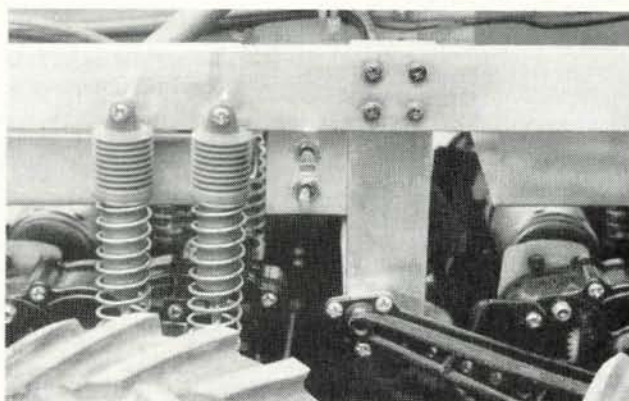


Installed underneath the frame, a working winch motor uses a 20-pound test steel fishing line.





Tie-down ratchets are mounted on brass rail and allow fore and aft adjustment.



Two miniature toggle switches activate winches: The top switch controls the bed lift, while the bottom switch controls the front winch.

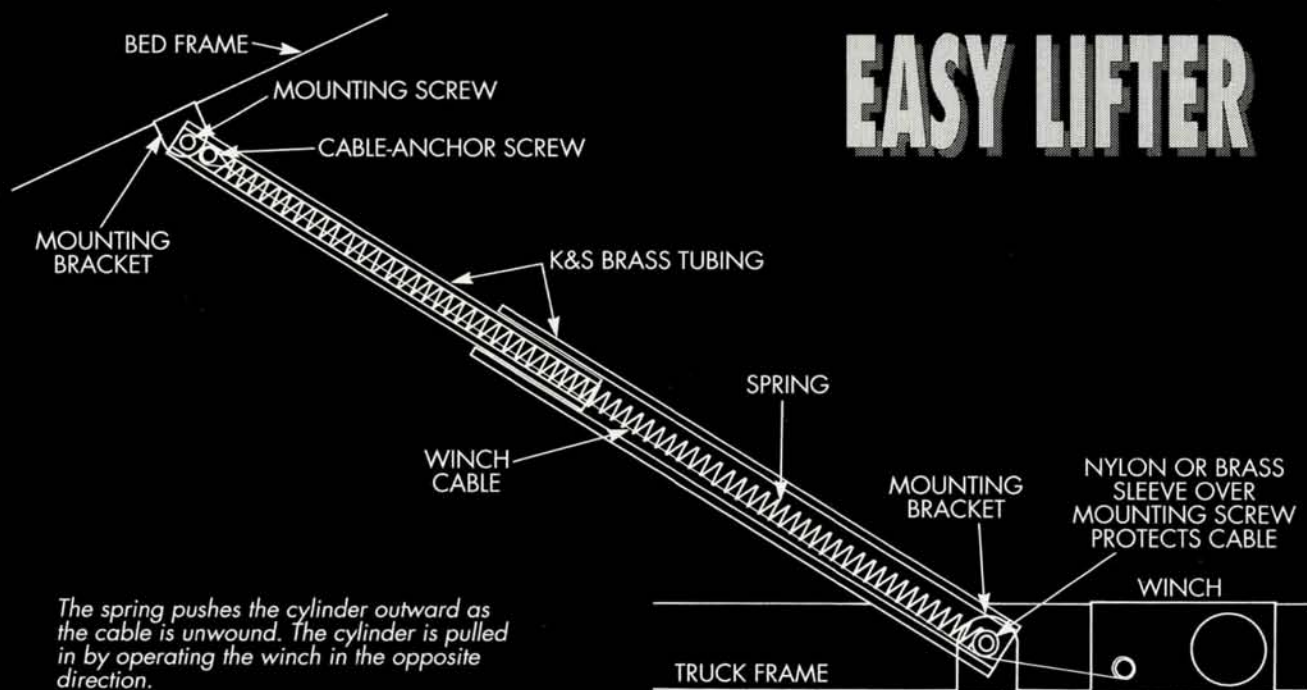
dump truck.

For this photo session, we tried something a little different: We usually see monster trucks crushing cars, so we thought we'd try to crush other monster trucks! I volunteered my nephews' twin Clod Busters—custom paint and all—

for the ordeal, and, while we didn't actually crush them, we did take some interesting photos. You can see the sheer size of the Monster Mack in comparison with a stock Clod Buster.

Well, Jon, what's next?...Hmmm...Let's see;

maybe a diesel-engine sound unit, or an electric-train smoker unit hooked to the exhaust stack? How about cab marker lights? Or...?—you never know what might come out of the Freed garage! ■



IF YOU'RE looking for a crowd-pleasing monster-truck accessory, a working body lift or a dump bed might be just the ticket! The drawing shows how Jon Freed made his working "hydraulic" cylinder. On the Monster Mack, the cylinder is quite large so that it can lift the long, heavy, wood-and-aluminum bed, but the design can be adapted to

fit almost any application. The only difference is in the length of the sliding brass tubing and the internal spring. Experiment with mounting locations to get the lift to work properly.

PARTS LIST:

- Tubing - K&S (telescopic)
- Spring - available at your local hard-

ware store (select appropriate size)

- Winch motor - Como drills, No. 430G or 431G (distributed by Hobby Lobby and available at your local local hobby shop)
- Cable - 20-pound, steel, test fishing leader
- Mounting brackets - handmade aluminum

POLE POSITION

by RICH HEMSTREET

BATTERIES DON'T BEAT YOU!

"BATTERIES ARE THE name of the game"; "If you don't have killer batteries, you might just as well stay home"; "Whoever has the best batteries will win." These types of complaints are common across the country. Everybody seems convinced that they're losing races to killer batteries. Although batteries might be a major factor in the upper Mains at most national events, this usually isn't true at your local track. In fact, the main reasons why most people lose each week is that their driving skills aren't up to par, or that their cars break down and they can't finish the race. These two reasons are actually closely related and have one common solution: Practice!

The quickest way to become a better driver is to put in more hours on the drivers' stand, and to do this, you have to keep your car in running condition. By turning more laps in practice, you'll be able to identify areas that could make your car more reliable, and you'll have time during practice to diagnose and correct any mechanical failures. On race day, you just don't have this kind of time.

Don't you hate it when you hit the throttle at the start of your first qualifier, and it's painfully obvious that your ball diff is too loose? You immediately have to make a choice: First, you can choose to ride out the heat with the slipping diff and hope that your next heat will be better. Second, you can park the car and *know* that your next heat will be better. Third, if trackside repairs are permitted, you can hope that someone waves you over to the wall and tightens your diff for you. By comparison, if your diff slips on your first practice lap, you simply take a lap, then pull in and tighten the adjusting nut. No panic, no frustration, no decision-making: You just do it. The more often you adjust your diff in practice, the quicker you'll learn to recognize the proper adjustment on race day.

During a busy race schedule, halfway through your second qualifier, with your car in the far turn, you might notice that it has developed a minor glitch; immediately after your race, however, you have



Above: "Practice until you get it right" was the motto of the Hyperdrive team at the East-West Shootout. Cliff Rose catches the car as Snuffy Smith drives into the pits.

Right: Time after time, Rose held the car as Bill Morton pulled out the used pack and slipped in a new one.



PHOTOS BY WALLY DAVID

to be turn marshal, and *then* you have to count laps for the next race. By the time you get back to the pits, all you can think about is getting a fresh battery pack into your car and peaking it for the next heat. No thought is given to the minor glitch until it becomes a major, chassis-breaking glitch in your next qualifier!

If this minor glitch develops during practice, however, you can start searching for the source of the problem as soon as you pick up your car from the track. Start by checking for loose wires or damaged motor capacitors. Next, check the antenna for damage or loose connections. There's no need to hurry: Just take your time, find the problem and fix it correctly. As you put more time into honing your driving skills, you'll automatically be "bulletproofing" your car.

When practicing, don't try to get the maximum performance out of your car. If you just make 4 minutes with a 4:1 gear ratio during racing, you should probably practice with a 4.25:1 or 4.5:1 gear ratio.

The car will run a little more slowly, but it will give you a longer run time. During practice, it's important to work on your driving skills, not to shoot at track records. Practice may not make perfect, but it sure does help!

At the RC Thunderdrome, the Hyperdrive team's display amply showed the importance of practice. Over and over, team drivers Snuffy Smith and Ralph Burch Jr. practiced their superspeedway pit stops, and their pit crewmen, Cliff Rose and Bill Morton, changed battery packs and put the cars back on the track. The driver took one or two laps and then pulled in for another stop. Cliff caught the car and picked it up, and Bill pulled out the pack and installed another one. Cliff then set the car on the track and gave it a push to provide a rolling start. By using just three battery packs with each car, it was possible to do 30 or more pit stops in 10 to 15 minutes of concentrated practice. When it was time to race, the Hyperdrive team had the smoothest, most controlled

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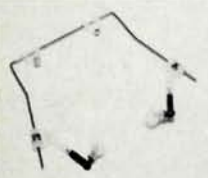
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POLE POSITION

pit stops during the entire race, and this certainly didn't go unrewarded: Ralph won the Superspeedway main event, and Snuffy TQ'd and finished second.

Car Action East-West Shootout

Radio Control Car Action is sponsoring a two-race points series: the East-West Shootout for pro superspeedway racing. The western half of the event was completed at the RC Thunderdrome in Encino, CA. Snuffy Smith is in the lead with 103 points, and Ralph Burch Jr. is only one point behind in 2nd place. Rick Pruitt is in 3rd place with a 100-point total. In 4th place is Bud Bartos with 99 points, and Rick Jordan rounds out the top five. This series will also determine the 1989 NARA Pro National Champion.

Speaking of a points race, the season is also drawing to a close on the Pole Position National Championship (PPNC). The RC Thunderdrome was the third event in the series. Maintaining a points series for three classes has proven to be a major undertaking. It's especially difficult when you have to deal with the misspelled names in computer print-outs of race results!

The Amateur Stock PPNC has clearly



Heading into the final event—the Car Action Weekend—Kent Clausen continues to lead the points standings for the PPNC Pro Class drivers.

Hoyte Stacey's 7th-place A-Main finish has given him a 540-point total. If Hoyte races in the Amateur Modified Class at Whippoorwill, he's virtually guaranteed the PPNC victory, unless there's a recount because of misspelled names. The Amateur Modified Class has probably had more participating drivers than any of the other classes. It seems, though, that a new group of modified drivers shows up at each track. Hoyte's key to success has been attendance at all three races so far.

With Kent Clausen leading the way, the Pro PPNC has the best race going on. Kent had a 6-point lead after the second round at the Peachbowl, and he now has a 12-point lead over 2nd place. Tony Neisinger moved up from a 5th-place tie to take 2nd with 570 points, and he also picked up 3 points on Kent at the Thunderdrome. By finishing 3rd in the A-Main out west, Bud Bartos jumped into 3rd place. At Lake Whippoorwill, the "Legend" will need a miracle to make up the 19 points that separate him from Kent. Ralph Burch Jr. jumped way up the list to 4th place with 530 points, and Rick Jordan rounds out the top five with 524 points. Just for the record: Bill Horne is in 6th place with 498 points; Rick Pruitt is one point behind Bill; Snuffy Smith moved up to 8th with 484 points; Gary McAllister holds down the 9th-place spot with 471 points; and Tom Crow rounds out the Pro Class Top Ten with 450 points.

I'm hoping that the Pole Position National Championship and the Car Action East-West Shootout will serve as springboards for an actual national series next year. I'm going to meet several manufacturers next week, and I'll let you know if anything happens. Next month, I'll also give you an update on the Chassis Manufacturer Championship, which I've run in conjunction with the PPNC. Until then: Practice, practice, practice!



Ricky Jordan has taken the lead in the Pole Position National Championship Amateur Stock standings.

become a two-driver race. Ricky Jordan has moved into 1st with his 6th-place A-Main finish at the Thunderdrome. Ricky now has 578 points. Matt Cupka's 3rd-place B-Main finish moved him into 2nd place with 554 points. If Ricky finishes higher than 7th in the B-Main at the Third Annual Car Action Weekend, he'll win the championship, no matter where Matt finishes.

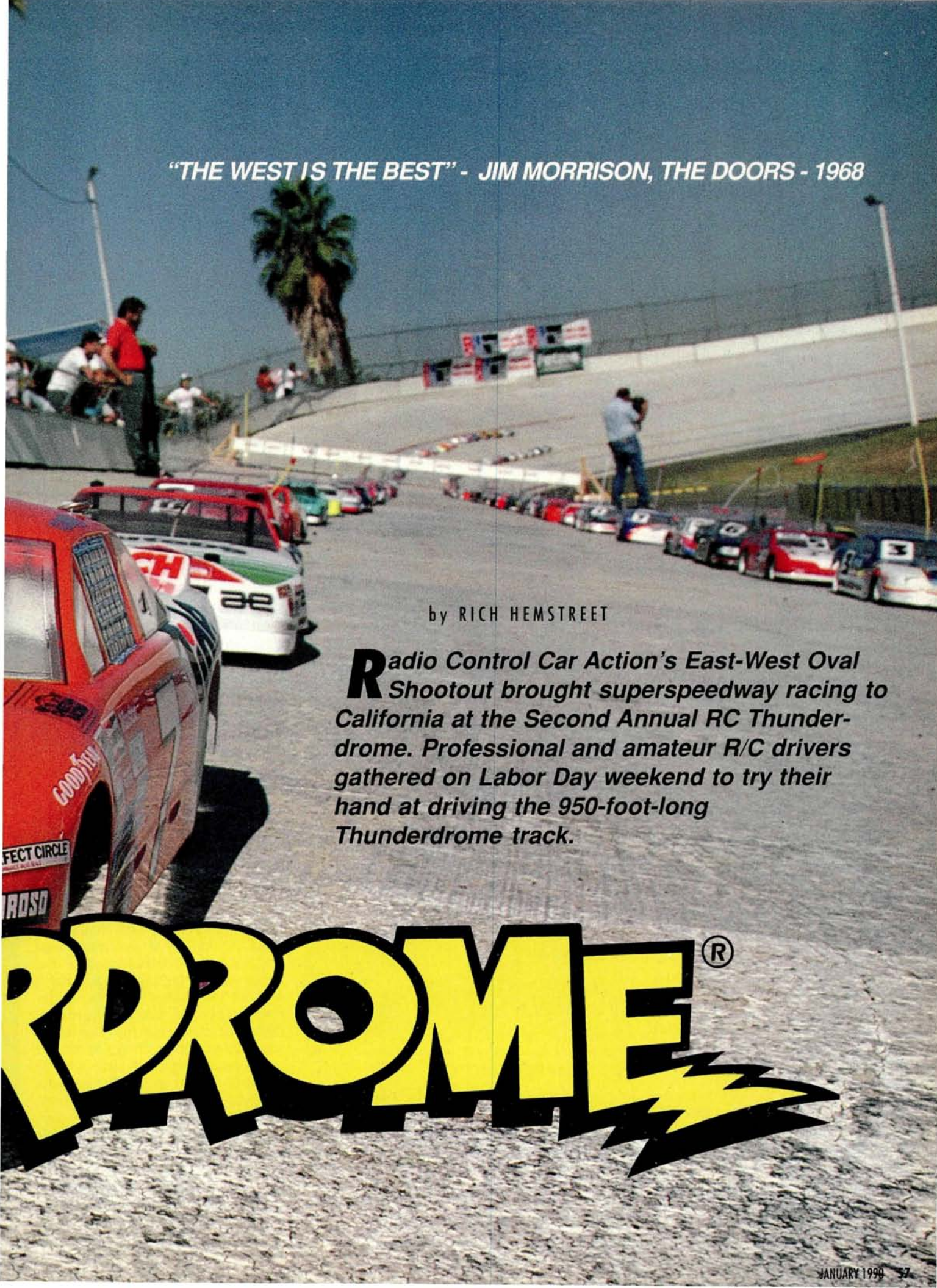
The Amateur Modified PPNC appears to have turned into a one-driver show!

RADIO CONTROL CAR ACTION'S

High Banked **EAST-WEST OVAL SHOOTOUT**



RC THUNDER



"THE WEST IS THE BEST" - JIM MORRISON, THE DOORS - 1968

by RICH HEMSTREET

Radio Control Car Action's East-West Oval Shootout brought superspeedway racing to California at the Second Annual RC Thunderdrome. Professional and amateur R/C drivers gathered on Labor Day weekend to try their hand at driving the 950-foot-long Thunderdrome track.

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McAllister Racing and Dan's RC Stuff co-sponsored the RC Thunderdrome and handled all the preparation and the execution of the event. Of the six classes, the premier events

international Speedway.

Over 200 racers were on hand, along with the "Noid" from Domino's Pizza. Prior to the event, Domino's Pizza supported the East-West

were the Pro Superspeedway races. The pros earned Car Action East-West Shootout points in the Superspeedway Mains. These points will determine the 1989 NARA National Champion when combined with their points at the upcoming third annual Car Action Weekend at Lake Whippoorwill In-

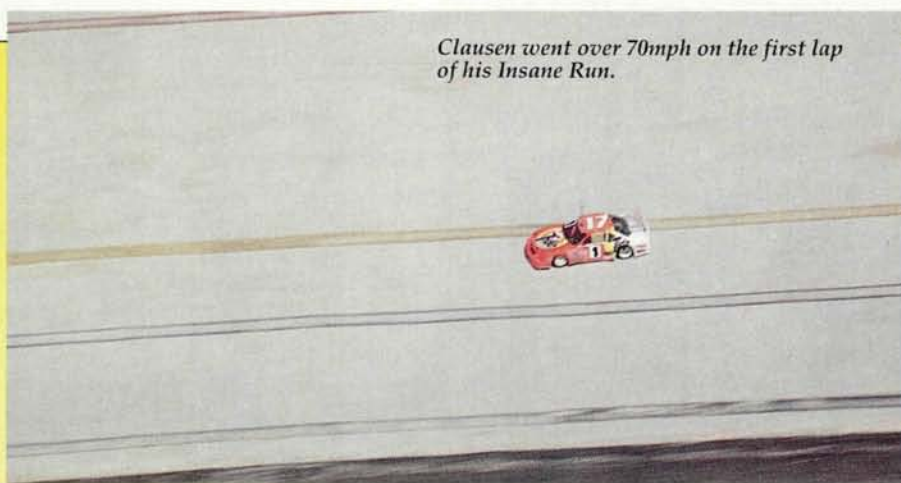
70 MPH!

On the second lap of his Insane Speed Run at the RC Thunderdrome last year, Kent Clausen exceeded 57mph, but, because he flipped his car on the back stretch before he could finish the run, Mike Lavacot held on to the 1988 Insane Speed Run record with his 52.8mph, 1-minute run. This year, the speeds were even more "insane"!

Clausen predicted that he would hit 70mph this year, but although he drove at 60mph during one of the 4-minute Pro races, 70mph still seemed awfully high. Clausen reasoned that more power means more speed, so in place of his seven sub-C SCE batteries, he installed 10, 900mAh, $\frac{3}{4}$ sub-C SCR batteries in his Associated 10L. He used a standard Reedy Gold Star 14-turn production motor, and he changed the gearing from his 4-minute gear combination of 25:108 to 24:108. His only other modification was to slightly increase the angle of his rear wing, and this gave the car more downforce and stability.

Did it work? You bet! On his first lap, Clausen blazed around the 950-foot oval in just a little more than 9 seconds for an average lap speed of 70.1mph. The 70mph barrier had been broken! He went on to complete his 1-minute run with an overall average speed of 65.67mph, but his lap times dropped quickly because the plastic washers inside the motor melted. This gave the armature too much end play, which destroyed the motor.

With an average speed of 64.35mph, Hyperdrive's Ralph Burch



Clausen went over 70mph on the first lap of his Insane Run.

Jr. was the second-fastest driver, and Shawn Ireland (Clausen's Associated teammate) finished at 64.10mph with the third-fastest time.

Aside from Clausen's 70mph feat, the three most exciting runs all had big finishes. Snuffy Smith's Hyper 10 was travelling faster than 60mph when it hit the base of the scoring bridge and came to an immediate stop. Bud Bartos was racing down the back stretch at more than 60mph when the upper level of his bi-level wing was ripped from the car, so causing it to flip. Tem Raskin was also exceeding 60mph as his car took a sudden right turn coming out of turn two. The car went under the outer



Tem Raskin managed to fit his car under a 2 1/2-inch-high opening in the retaining wall—at over 60mph!

wall and through a 2 1/2-inch-high opening. Raskin's entire $\frac{1}{10}$ -scale car was reduced to a height of 2 1/2 inches, and virtually every component was broken. His car body wouldn't even "pop" back into shape; it was permanently "tweaked"!

Now that the 70mph barrier has been broken, what will be the next to fall? Will Clausen aim for 75 next year, or will he stick with round figures and shoot for 80mph at the next RC Thunderdrome event?

PRO MODIFIED

Fin	Qual	Name	Chassis	Motor	Speed Control	Tires	Batteries	Body Mfg.	Body Style	Sponsors
1	10	Shawn Ireland	Associated	Reedy	Novak	TRC	Reedy	Associated	Lumina	Team Associated/Reedy
2	3	Tom Bowlin	Scratch	Checkpoint	Tekin	Bolink	Sanyo	Bolink	Thunderbird	Bolink/Checkpoint
3	2	Bud Bartos	Bolink	CAM	Novak	TRC	Power Push	Bolink	Thunderbird	Bud's Racing/CAM
4	8	Tony Neisinger	TRC	Trinity	Novak	TRC	Trinity	Andy's	Lumina	Trinity/TRC
5	9	Ken Buzzard	Associated	Quarterflash	Airtronics	Bol/TRC	Quarterflash	Bolink	Lumina	Quarterflash/Bolink
6	1	Kent Clausen	Associated	Reedy	Novak	TRC	Reedy	Associated	Lumina	Team Associated/Reedy
7	6	Tem Raskin	Vicfor	Race Prep	Novak	TRC	Sanyo	Andy's	Thunderbird	Race Prep/R&R Hobbies
8	5	Ralph Burch Jr.	Hyperdrive	CAM	Novak	Wide Track	Hyperdrive	McAllister	Thunderbird	Hyperdrive/Futaba
9	7	Snuffy Smith	Hyperdrive	CAM	Novak	Wide Track	Hyperdrive	McAllister	Thunderbird	Hyperdrive/CAM
10	4	Bob Summer	TRC	B&R	Novak	TRC	Progressive	McAllister	Lumina	TRC/B&R

PRO SUPERSPEEDWAY

Fin	Qual	Name	Chassis	Motor	Speed Control	Tires	Batteries	Body Mfg.	Body Style	Sponsors
1	9	Ralph Burch Jr.	Hyperdrive	CAM	Novak	Wide Track	Hyperdrive	McAllister	Thunderbird	Hyperdrive/Futaba
2	1	Snuffy Smith	Hyperdrive	CAM	Novak	Wide Track	Hyperdrive	McAllister	Thunderbird	Hyperdrive/CAM
3	11	Rick Pruitt	McAllister	Revtech	Novak	CKW	Revtech	McAllister	Lumina	McAllister/Revtech
4	12	Bud Bartos	Bolink	CAM	Novak	CKW	Power Push	Bolink	Thunderbird	Bud's Racing/CAM
5	13	Rick Jordan	Bolink	Wimpy	Novak	Bolink	Gonzo	Bolink	Thunderbird	Bolink
6	10	Randy Moller	C&M	Twister	PDI	SAT	Team Smooth	Bolink	Pontiac	C&M/SAT
7	5	Tem Raskin	C&M	Race Prep	Novak	TRC	Sanyo	Andy's	Thunderbird	Race Prep/Fast Lane Hobbies
8	17	Eric Steinhoven	Bolink	Checkpoint	Novak	CKW	Reedy	McAllister	Pontiac	Sign Art/Checkpoint
9	14	Dave Campbell	Delta/Probe	Paragon	Tekin	Delta	A&D	McAllister	Oldsmobile	Delta/Probe
10	16	Carlos Turano	Associated	Revtech	Tekin	CKW	Revtech	Andy's	Lumina	Cheetah/Revtech
11	15	Steve Pritchett	McAllister	Revtech	Novak	CKW	Revtech	McAllister	Thunderbird	McAllister/Revtech
12	7	Steve Stifel	Delta/Probe	Paragon	Tekin	CKW	Peak Perf.	McAllister	Thunderbird	Delta/Paragon
13	8	Jason Altsman	Bolink	Checkpoint	Tekin	Bolink	Tekin	Bolink	Pontiac	Checkpoint/Tekin
14	4	Bryan Blazer	McAllister	Revtech	Tekin	CKW	Revtech	McAllister	Pontiac	CKW/Revtech
15	18	Bobby Sumner	TRC	B&R	Novak	TRC	Progressive	McAllister	Lumina	TRC/B&R
16	2	Bill Horne	TRC	CAM	Novak	TRC	Pro Proven	Bolink	Oldsmobile	Pro Proven Products/TRC
17	6	Tony Neisinger	TRC	Trinity	Novak	TRC	Trinity	Andy's	Lumina	Trinity/TRC
18	3	Larry Stevens	McAllister	Checkpoint	Dialed	CKW	K.I.	McAllister	Thunderbird	McAllister/Checkpoint

ROAD WIZARD

Fin	Qual	Name	Motor	Speed Control
1	6	Hobie Kaptan	Revtech	Tekin
2	8	Bob Sarnelle	B&R	Tekin
3	3	Louis Maldonado	Revtech	Novak
4	4	James H. Kimura	Trinity	Futaba
5	9	Richard Dowdy	Trinity	Futaba
6	5	Michael Ogle	Race Prep	Novak
7	1	Steve Schooler	B&R	Novak
8	7	Steve Saik	Revtech	Novak
9	2	Bill Strauss	Trinity	Futaba
10	10	Gary Hedrick	N/A	N/A



Domino's Pizza bumper stickers appeared all over the place, including on the AMB scoring bridge.

Shootout by passing out thousands of pizza boxes with flyers on them. They also sold pizza by the slice at trackside, as the Noid personally checked out the R/C car scene.

The amateur drivers raced in Stock, Modified, Gearbox and Road Wizard Classes, which were all 4-minute heats and Mains. The pros raced in their own 4-minute heats and Mains, and the longer Superspeedway races. The 20 fastest pro qualifiers also had an opportunity to run the 1-minute Insane Speed Run. In last year's Insane Run, Kent Clausen was able to top 57mph on one lap, and Mike Lavacott averaged over 52mph for a full minute.

After two days of practice, the qualifying got underway

with the pros running their first 4-minute qualifiers on Friday morning and the amateurs taking over the track on Friday afternoon. As is usually the case at most tracks, the key to getting hooked up on the huge Thunderdrome track seemed to be finding the correct tires. Each night, the track stayed open late for practice, and many of the racers took advantage of all the track time they could. Since the fastest qualifiers were only competing 19 laps in 4 minutes, most drivers used quite a few battery packs before they felt comfortable running this unique



Global Hobbies provided 10 identically prepared Panda Stockers for an IROC-style race on Sunday morning.

track. Once they got used to the track, they started working on consistency.

Very early in the weekend, it became apparent that last year's records were in

deep trouble. Many of the Amateur Modified Class cars were turning laps in excess of 50mph during their 4-minute heat races, and the pros were going even faster.

When 4-minute qualifying was completed on Saturday, the top Pro Modified driver was Kent Clausen with 21 laps in 4 minutes. He was the only driver that weekend who turned 21 laps in 4 minutes, and he

averaged over 55mph with his Reedy-powered Associated 10L. Bud Bartos, the second-fastest qualifier, averaged more than 53mph with his CAM-pow-

AMATEUR STOCK

Fin	Qual	Name	Chassis	Motor	Speed Control	Tires	Body Mfg.	Body Style
1	1	John Jenkins	Associated	B	Novak	CKW	McAllister	Lumina
2	4	Joe Ryan	Associated	& H	Novak	Twinn-K/CKW	Parma	ASA Dodge
3	3	Mike Ost	Scratch	R A	Tekin	Twinn-K	Associated	Lumina
4	9	Jay Mendoza	Associated	N	Tekin	SAT	Andy's	Lumina
5	6	Dave Werner	Vicfor	M D	Novak	CKW	Andy's	Grand Prix
6	2	Ricky Jordan	Bolink	O	Novak	Bolink	Bolink	IROC Camaro
7	7	David A. Wert	Associated	T O	Novak	SAT	McAllister	Firebird
8	8	Emil Ramos	Composite Craft	O U	Novak	Bolink	Bolink	IROC Camaro
9	10	Randall Rausch	Advance Race Tech	R T	Novak	Twinn-K/TRC	Andy's	Firebird
10	5	Todd Wheaton	R.C. Inovations	S	Novak	CKW	McAllister	Firebird

AMATEUR MODIFIED

Fin	Qual	Name	Chassis	Motor	Speed Control	Tires	Body Mfg.	Body Style
1	1	Cliff Rose	Hyperdrive	CAM	Novak	Wide Track/TRC	Associated	Lumina
2	3	Tom Owens	TRC	B&R	Tekin	Twinn-K	McAllister	Thunderbird
3	9	Ernie Prince	McAllister	Race Prep	Novak	CKW	McAllister	Lumina
4	8	Bill Morton	Hyperdrive	CAM	Novak	WideTrack	McAllister	Thunderbird
5	6	Steven Redd	Thundercar	Twister	Novak	Homemade	Parma	Oldsmobile
6	5	Ken Moon	Scratch	Quarterflash	Novak	CKW	McAllister	Lumina
7	7	Hoyte Stacey	Associated	Trinity	Novak	CKW	Bolink	Lumina
8	9	Luis Mejia	TRC	Revtech	Novak	CKW	McAllister	Lumina
9	2	Neil VanOrder	McAllister	CAM	Novak	CKW	McAllister	Thunderbird
10	4	Jerry Meisenzahl	McAllister	B&R	Novak	TRC	McAllister	Thunderbird

GEARCASE

Fin	Qual	Name	Chassis	Motor	Speed Control	Tires	Body Mfg.	Body Style
1	1	Roger Pane	RC10	Reedy	N/A	CKW	McAllister	Firebird
2	3	Ted McDonald	RC10	Trinity	Novak	CKW	Parma	Thunderbird
3	5	Steve McAfee	RC10	Twister	Novak	CKW	JG	Thunderbird
4	6	Jim Banicasa	DC	Peak Perf.	Novak	TRC	JG	Thunderbird
5	4	David Mayhew	DC	Peak Perf.	Novak	TRC	McAllister	Firebird
6	8	Larry Pipp	RC10	Checkpoint	Novak	Twinn-K	MRP	Wedge
7	10	Ken Campbell	Delta X	Paragon	Tekin	Delta	Associated	Wedge
8	2	E.C. Jones	Scratch	B&R	Novak	CKW	Premier Design	Wedge
9	9	Juan Diaz	RC10	Trinity	Tekin	TRC	McAllister	Pontiac
10	7	Jeff Wright	Scratch	Checkpoint	Novak	Twinn-K	MRP	Wedge



Left: This view from the Car Action whirllybird gives you an idea of just how big the RC Thunderdrome track really is.

Below: Associate Editor Wally David took flight (with the aid of a helicopter) to capture every angle of the Car Action East-West Shootout.

ered Bolink Eliminator. Tom Bowlin drove his scratch-built Checkpoint-powered racer to 3rd on the Pro Modified 4-minute A-Main grid.

Cliff Rose was the Amateur Modified top qualifier with his Hyper 10. He used CAM power to turn 19 laps for an average speed of 51mph. Neil Van Order drove a CAM-powered McAllister Outlaw to capture the outside of the front row. Van Order averaged just under 49mph on his 19-lap qualifying run. Third on the A-Main starting grid was Tom Owens' B&R Motorworks-powered TRC Pro 10, which was only .2mph slower than Van Order's Outlaw.

The Amateur Stock Class cars used B&R Motorworks hand-out motors. At 23 turns, these were hot motors by stock standards, but the promoters wanted the stock-class drivers to be able to experience some of the speed this track had to



SUPERSPEEDWAY RACING

Isn't every race that's held on a high-banked oval track called superspeedway racing? No! Superspeedway racing has more to do with the cars and the style of racing than with the tracks on which the cars race.

The longer superspeedway races require greater driver concentration than do the usual 4- or 5-minute, 1/10-scale on-road races. The cars have to stop for battery changes during the races, and this makes the pit crew an important part of a driver's success. At most superspeedway races, each driver is allowed to have two pit-crew members in the infield and one spotter, who stands next to the driver. Superspeedway racing really is a team effort. When a car breaks down during an event, the driver and the spotter have to wait for the crew to repair the car. All types of repairs have been completed in the pits, including T-bar replacements and motor swaps!

Each team has developed its own

quick-change battery system for superspeedway racing. Most pit crews can now change battery packs in less than 5 seconds, stop after stop. With its 1/10-scale racer, the Eliminator Enduro, Bolink was the first manufacturer to develop a quick-change production car. Inter-fab and Lazer Lite have also introduced quick-change cars, and Cheetah Racing designed the QC/DC battery system, which can easily be adapted to most 1/10-scale on-road cars.

Until this spring, these races were called "enduros," but many felt that the enduro label didn't do justice to this new style of racing. In a hotel hallway late one night, it was decided that "superspeedway racing" is the label that will bring R/C racing into the '90s.

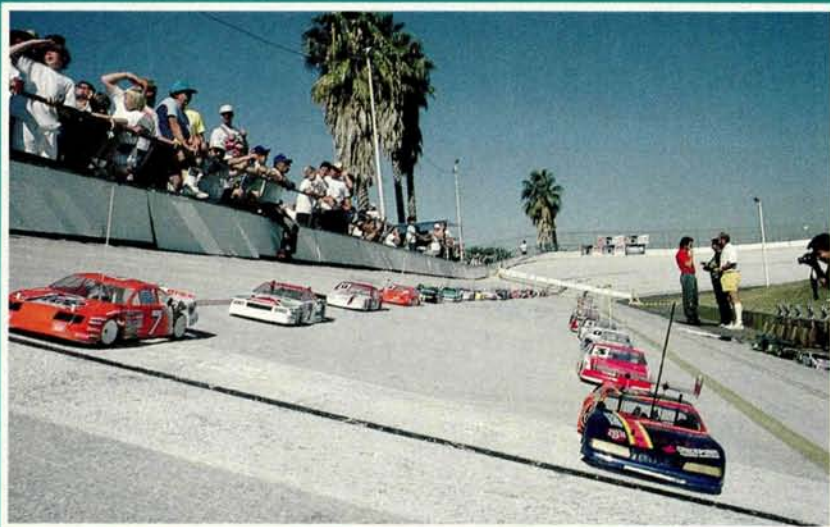
There's one problem: What do you call 4- or 5-minute, on-road races that take place on high-banked ovals—or anywhere else, for that matter?



Between pit stops, the crews watched the on-track action.



In the Superspeedway Mains, Cliff Rose and Bill Morton provided quick stops for winner Ralph Burch and 2nd-place Snuffy Smith.

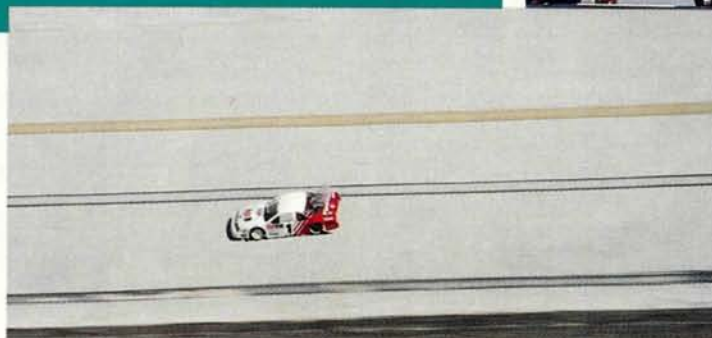


If only we had enough frequencies to let all these cars go at the same time...!

offer.

John Jenkins shelved his dirt-oval Dominator ride to try his hand at pavement racing in the Stock Class with an Associated 10L. Jenkins captured the pole position with a 17-lap run where he averaged 44.79mph. Ricky Jordan was less than $\frac{3}{10}$ of a second slower, averaging 44.76mph with his Bolink Eliminator, and Mike Ost was third fastest with his scratch-built car that averaged nearly 44mph for 17 laps.

Roger Pane used a Reedy-powered RC10 to run off and hide from the rest of the Gearcase Class. He averaged more



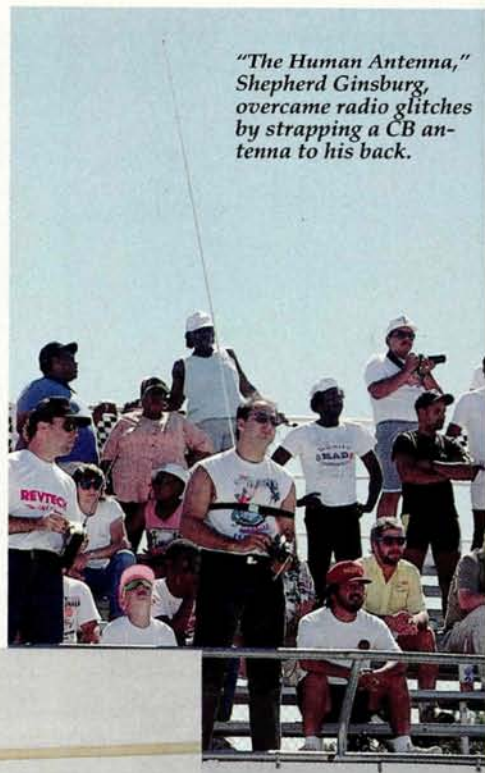
Snuffy Smith kept his Hyper 10 between the track's two lower black lines, and this was the fastest line, keeping "trouble" at least 18 inches below him on the blacktop.

than 46mph on his 18-lap TQ run. Using a B&R Motorworks motor, E.C. Jones drove his scratch-built ground-effects car 43.6mph to become the second-fastest qualifier. Less than $\frac{2}{10}$ of a second behind Jones, Ted McDonald's Trinity-powered RC10 was the third fastest. Steve Schooler TQ'd the Tamiya Road Wizard Class by running a B&R Motorworks in his Wizard and averaging 47.20mph on his 18-lap run. Bill Strauss, who averaged 46.2mph with his Trinity-powered car, was the second-fastest qualifier, also turning 18 laps. Louis Maldonado used Revtech power to capture the third starting spot with his 17-lap run.

Only 18 cars took part in the Pro Superspeedway qualifying, which was broken into two, 9-car, 14-minute heats. It was planned that the Superspeedway Main would have all 18 cars take the green flag, so these qualifiers were more for practice and a chance to show Southern



TQ Kent Clausen once again proved the old axiom, "Win Concours and lose the race," when he only managed a 6th-place finish in the Pro Modified A-Main.



"The Human Antenna," Shepherd Ginsburg, overcame radio glitches by strapping a CB antenna to his back.

by DANADA RAUSCH

THUNDER WHAT?

NO, NEVER MIND. Don't tell me, I don't want to know. I don't care where it is. I don't have the time, it's too expensive, and we can't afford it! Now go clean up your room.

Thunder what? Encino? Why would I want to go to Encino? If it's an Olympic bicycle track, they should have bike races there, not R/C car races. What do you mean "banked"? If you want "banked," go run your car over the skateboard ramp. It'll break, and I won't have to hear any more about Thunderbolt. Oh, whatever! If I want to call it Thunderbolt, don't argue. Have you cleaned up your room?



Noid at the Thunderdrome.

I've explained why. Read my lips! I'm too busy, and we can't afford it. What do you mean, "It's only \$40, and you get a free motor and a free T-shirt?" How can you say it's free if it costs \$40? Relax. Breathe. You're going to hyperventilate. I didn't say you can't race anymore; I want you to race. Don't you understand? You know I've been buried in work all summer, and I'm exhausted.

Yes, I'd love a vacation. I'm just not certain that spending four days in a trailer with two teenagers, two pairs of smelly tennis shoes, 2,000 car parts and several bottles of unidentified substances is my idea of a vacation!

Oh, look; let's make a deal:

You stop hyperventilating, and I'll call to see if they're accepting late sign-ups.

30 MINUTES LATER

Mom: Hey, where are you? *Guess what! I just got off the phone with somebody named Dan at Dan's RC Stuff. Did you know that a bunch of pros are going? Did you know they're trying to go over 70mph? And they're having a Panda Race where the top five amateurs are challenging the top pros? Did you know there's a place to park a trailer? Why didn't you say it would be so much fun?*

Son: Huh?

Mom: *Hurry up and fill out the form while I call dad to see if he can take our trailer down for us.*

Son: I thought we couldn't go!

Mom: *How many times have I told you not to have such a negative attitude? And...*

Son: I know: Clean my room!

AT THE RACE

I'm writing this in the bleachers between the main events, and I wouldn't be happier on a tropical island. Of course, it doesn't hurt that my son made the A-Main in Amateur Stock (even though he didn't follow my advice: "Drive carefully and don't break anything!"). He's only been racing a little over a year, and this is our first big race. He's always said he'd rather be last in the A than first in the B. We're excited!

Lots of newcomers came to watch. My favorite encounter was with a couple whose 14-year-old son just got his first "real" R/C car. He had the building instructions in his pocket. When his mom looked at them, her response was classic: "You mean after all we paid for it, you still have to put it together?" The father, who wasn't mechanically inclined, was worried that his son would need help putting it together, and the mother didn't think they could afford it. (Where have I heard that before?!) We're still beginners ourselves, so I didn't realize that I'd become a devoted fan of R/C car racing until I heard my response to their questions:

"It's simple," I told them.

"Find a local track, and your son will have all the help he needs. Racers help one another all the time, even those they're competing against. Yes, it can get expensive, but it can also be affordable. The best way to make racing affordable is to find someone who's experienced

on an indoor carpet track. Naturally, he wanted to race, and he paid his first race fee. I could see it was good for him: His attitude had never been better!

This summer he had to work, and I told him I'd match everything he made. The total was his racing budget for the next



Kent Clausen, and all the rest of the Pro drivers, always drew a crowd when they worked on their cars.

(and wins!) to check out your racer's "needs" before you spend money on something he only *thought* he needed! It's more expensive to win than it is to lose, but a little common sense can make winning affordable, especially when you consider the hidden benefits.

"You see, I don't have the worries that other parents have. Drugs aren't an issue for my son. Every cent he earns (along with a lot of cents from me) goes into his car. The same goes for his friends: They all live, eat and breathe R/C cars. They don't need drugs—they're too busy!—and I always know where he is and who he's with. He's either at home working on his car, or at the track racing it. How much is parental peace of mind worth? Whatever it costs to keep my son racing!

"I'm not suggesting that parents write their kids blank checks. My son saved for a long time to buy his first car. Luckily, it was an RC10, and it's *still* running! Then I told him I wouldn't fix it every time he hit a curb at full speed. He washed dishes and saved birthday and Christmas money to buy parts; then he convinced me that he wouldn't break the car so much

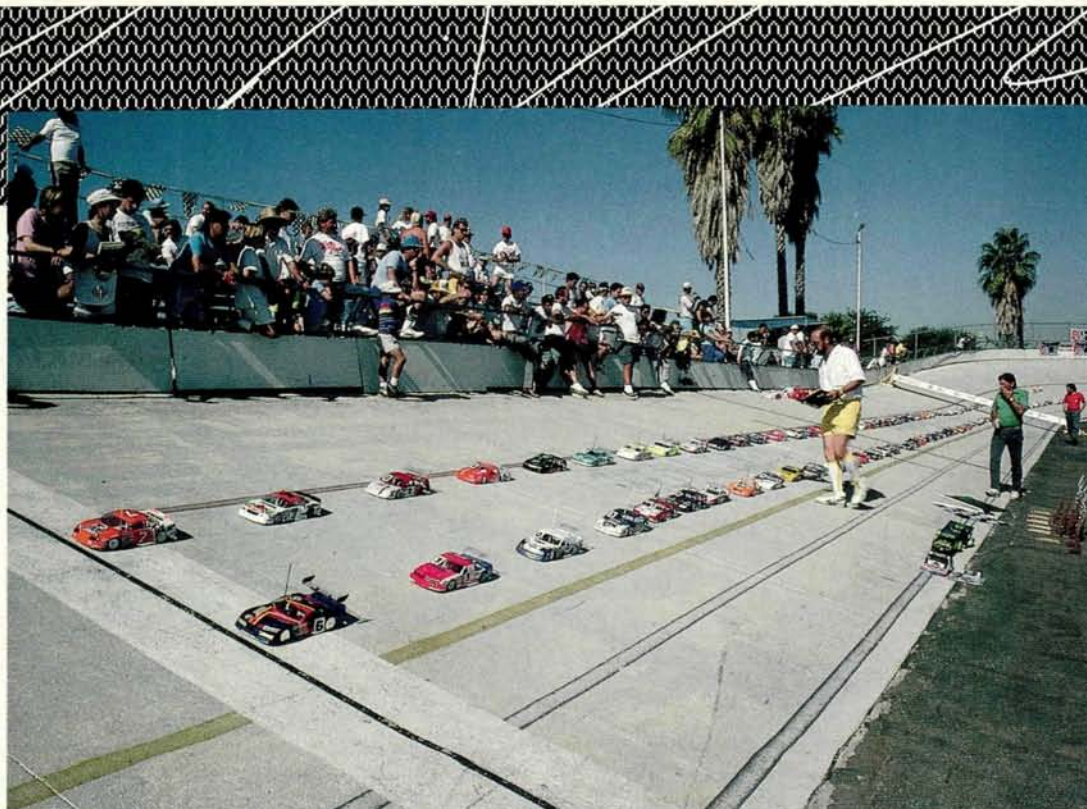
school year. I can hardly wait to see how many matched batteries he'll need now that he's budgeting himself!"

The weekend at Thunderdrome was a blast—every bit as terrific as Dan Moynihan promised it would be—and maybe even better! Thanks, Dan, for convincing me that my son was right and that we'd love it!

What I said earlier about racers helping one another was never more evident than at Thunderdrome. All the pros were available to answer questions and to help the amateurs any way they could. It was a real learning experience. The proof was watching my son listen to Chuck Van DeWeghe and seeing him improve with each run until my son when he was desperate for crystals for his next heat. for my son to look up to and hang out with.

Oh, how did he finish in his Main? Well, he finished, and he didn't break *anything*!

Are we going to Lake Whippoorwill in October? *Absolutely not! Forget it! I don't have the time; it's too expensive; and we can't afford it!* So, who knows? Maybe we'll see you there!



Above: Tom Bowlin and Ricky Jordan practiced pit stops for Ricky's dad, and this helped Rick finish 5th in the Superspeedway event.

Left: Dan Moynihan kept track of the Concours winners during the Parade of Cars.



Left: The Road Wizard Class had a small turnout, but, thanks to the CKW hand-out tires, these cars really worked well on the huge track.

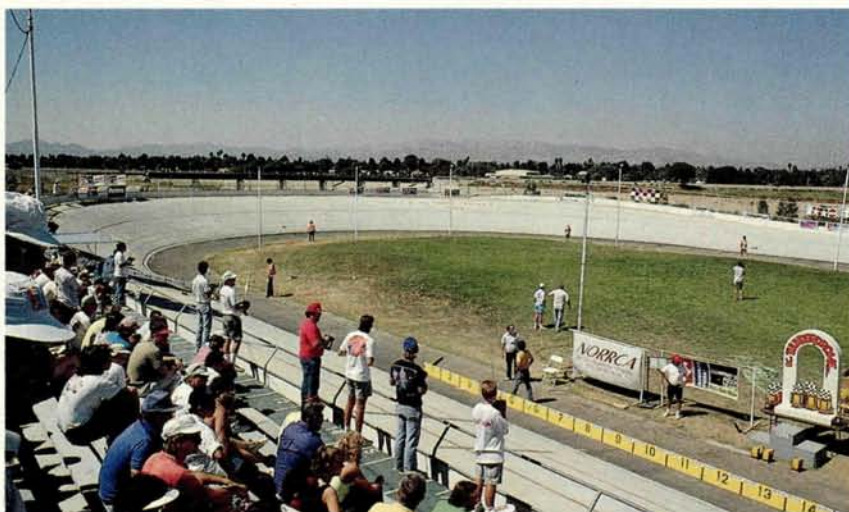


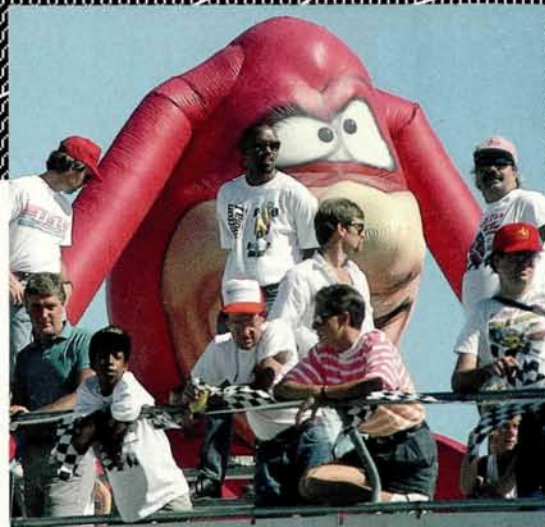
Far Left: Shawn Ireland only qualified 10th, but he won the Pro Modified A-Main.

Middle: Ireland's Associated 10L used five cells on the left side of the car and two on the right side.

Bottom Left: From behind the drivers' stand, you can get some idea of just how far away the third turn is.

Below: Dan and the Noid confer on Concours judging. The Noid wanted the Domino's car to win, but it wasn't in the cards.





Above Just behind the first turn loomed the 30-foot "Noid," courtesy of Domino's Pizza.

Left: Racers and spectators passed under the RC Thunderdrome banner as they entered the main gate.

California this exciting style of racing. (Prior to this Shootout, most of the superspeedway races had been held in Southern states, so this event was a first for many in the crowd.) These qualifiers would also determine the starting order for the Main. Snuffy Smith captured the Superspeedway pole position, driving his Hyperdrive/CAM-sponsored Hyper 10. Second-fastest was Bill Horne, driving the Pro Proven Products/TRC CAM-powered Pro 10, and Larry Stevens was third-fastest, driving the McAllister/Checkpoint-sponsored Outlaw car. Bryan Blazer rounded out the top four, driving a McAllister Outlaw sponsored by CKW/Revtech.

The Insane Speed Runs were also held on Saturday afternoon as the top-20 pro qualifiers went after Clausen's 57mph fastest lap from last year. This year, the top eight Insane Speed Run finishers all averaged over 57mph for the entire 1-minute runs.

Clausen won it all this year, driving his Reedy-powered 10L at 70.1mph on his first lap, and he averaged 65.67mph for the minute-long run. Ralph Burch Jr. was second fastest, averaging 64.35mph with his CAM-powered Hyper 10. Shawn Ireland rounded out the 64-plus group by turning 64.10mph with his Reedy-powered 10L.

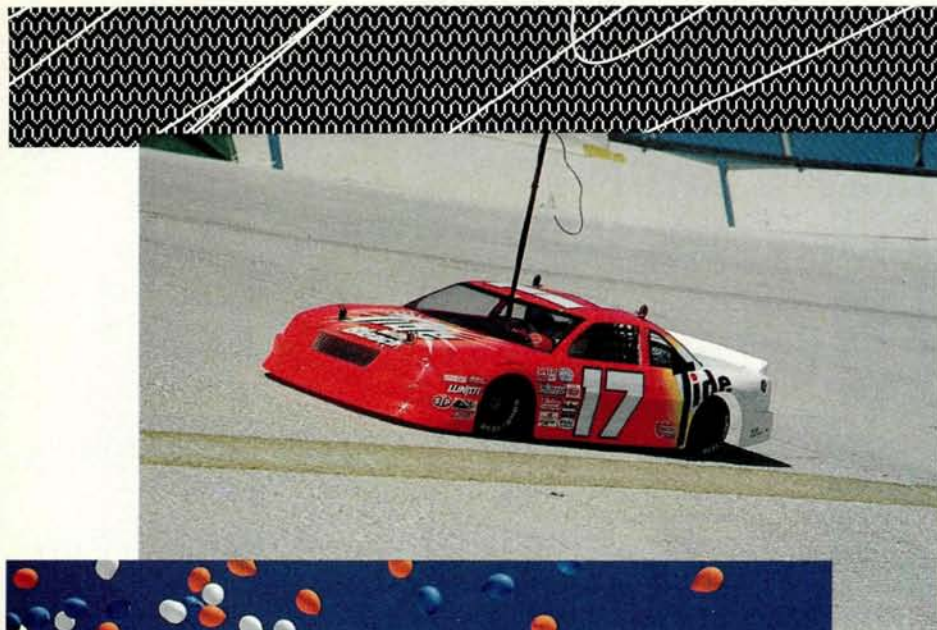
On Sunday morning, the Noid was out checking the

Parade of Cars. In fact, the Noid was even one of the concours judges. As Car Action's Associate Editor Wally David circled above the Thunderdrome in the Jet Copter, the judges chose 1st-, 2nd- and 3rd-place finishers in five different concours classes. Kent Clausen won 1st in the Pro class, Doug Warneke took top honors in the Amateur Modified Class, and Car Action's correspondent Danny Batinich won the Amateur Stock Concours title. Gear-case Concours went to Ted McDonald, and Hobie Kaplan rounded out the concours winners by taking the Road Wizard title.

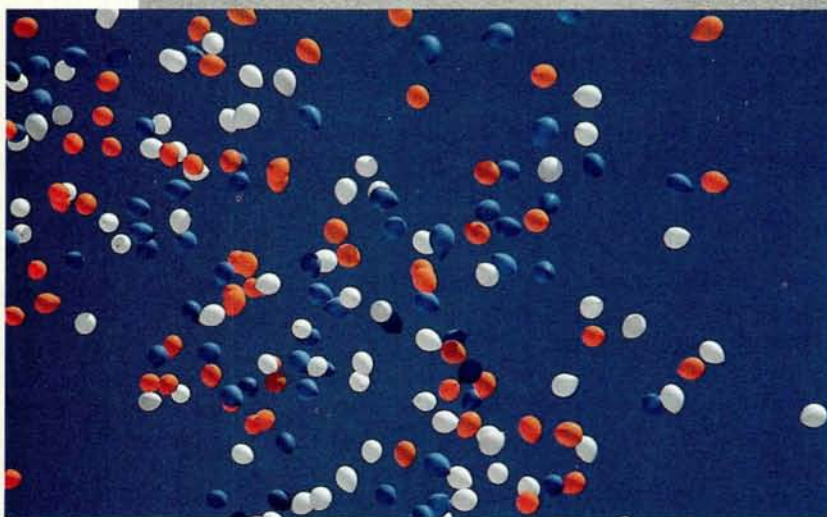
Next up was the IROC Panda race, courtesy of Global Hobbies. Global provided ten identically prepared Panda Stockers to pit the five fastest pro drivers against the five fastest amateurs. The Panda cars appeared to be slow on the huge oval, but they were turning 25mph average lap



Sunday's huge crowd left standing room only around the track, as the bleachers were filled early.



Left: Doug Warneke won the Amateur Modified Concours title with the brightest Tide car on the track.



After the singing of the national anthem, the balloons were released and the racing got under way.

speeds. The slower speeds were, in part, due to the gear ratios the Stockers were using, which assured each driver that he'd be able to make time in the 4-minute race. In fact, the drivers had so much juice left that, after they had finished the race, they started doing demo derby and thrill-show driving on the front stretch, which included loops, power spins, hitting reverse and each other. Unfortunately, the race results were lost, but everybody had a good time.

The racing started with the 13 lower Main events leading

the way. The last event of the weekend, the 100-lap, 18-car Superspeedway Main had to be rearranged into two, 9-car, 23-minute Mains, when it was determined that the hand-counting interface program wouldn't work with the automatic AMB scoring system.

Top qualifier John Jenkins drove to an easy victory in the Amateur Stock A-Main by averaging 45.16mph for 17 laps. Joe Ryan drove his Associated 10L from 4th on the starting grid to finish 2nd, also with 17 laps, and Mike Ost started and finished in 3rd place, one lap off the pace.

Cliff Rose backed up his 19-lap TQ run with a 20-lap victory in the Amateur Modified Class. Rose averaged 51.6mph as he won by a lap over the 2nd-place finisher Tom Owens. Ernie Prince moved up from 9th on the starting grid to finish in 3rd place with his Race Prep-powered McAllister Outlaw.

Roger Pane continued the TQs' domination of the A-Mains by easily winning the Gearcase Class with an 18-lap run. Pane dominated this class by averaging 47.5mph. (Most people felt that he would win if he could stay out of trouble, and he did.) Third-place qualifier Ted McDonald finished in 2nd (a little more than one lap behind), and Steve McAfee drove his Twister-powered RC10 to 3rd place, two laps off the lead.

The TQ charm ran out in the Road Wizard Class as TQ Steve Schooler dropped out of the race a little past the halfway mark. Hobie Kaptan, who averaged 44.8mph with his Wizard, won the Main using a Hyper-drive belt kit to get the Revtech power to the road. Bob Sarnelle finished



Corner marshalls had quite a climb to retrieve cars from the top of the track.



Roger Pane's Reedy-powered RC 10 was the class of the Gearcase field, winning by a full lap.

2.56 seconds behind Kaptan with his B&R Motorworks-powered Wizard. Louis Maldonado held on to his 3rd-place starting position and finished on the same lap as the winner. Because standard 1/10-scale tires don't fit the Tamiya Road Wizard Class of cars, Kevin Winans of CKW Tires donated special rubber-capped tires. This really helped the Wizard drivers, and it was an admirable gesture by a new, small manufacturer.

Even though he started in 10th place, Shawn Ireland won the Pro Modified A-Main. He drove a Reedy-powered 10L to a 2.86-second victory over the third fastest qualifier, Tom Bowlin. Ireland averaged 52.49mph on his way to victory. Bud Bartos fell back one spot, from 2nd at the start, to 3rd at the finish. Fourth-place finisher Tony Neisinger started in 8th place, but he stayed on the lead lap throughout the race with his Trinity-powered TRC car.

The results of the two Pro Superspeedway races were combined for one overall total. While it was disappointing that the 18 cars didn't get to race all at once, it did give the spectators the opportunity to see two, 23-minute races, instead of only one. Top qualifier Snuffy Smith took the early lead in the first race, but he lost it to his Hyperdrive teammate Ralph Burch Jr. on his first pit stop. The Hyperdrive pit crew, Cliff Rose and Bill Morton, kept the two Hyperdrive cars in the first two spots for the entire 23 minutes with the smoothest, most controlled pit stops of the weekend. Burch, who averaged 50.6mph to beat his boss by one full lap, completed 108 laps in 23 minutes. Tem Raskin finished the first Main with 92 laps, and this put him in 3rd place before the start of the second Superspeedway race.



Many West Coast fans had never seen 3-second pit stops in Superspeedway racing.

Rick Pruitt, driving the McAllister/Revtech Outlaw, won the second Superspeedway race, completing 102 laps before time expired. Bud Bartos drove the Buds Racing/CAM Eliminator 10 to 2nd place with 101 laps, and Rick Jordan drove his Bolink-sponsored Wimpy-powered Eliminator 10 to 3rd place with 96 laps. Randy Moller finished 9 seconds behind Jordan on the same lap with his C&M/SAT-sponsored Twister-powered Cobra.

When the results were combined, Ralph Burch Jr. was the winner of the western half of the Car Action East-West Shootout. Snuffy Smith finished 2nd; Rick Pruitt captured 3rd place; Bud Bartos took 4th; and Rick Jordan rounded out the top five spots.

Sears provided 10 DieHard batteries for the pit crews to use during the superspeedway events. This really helped the out-of-state drivers. (Lugging car batteries through airport terminals is no fun!) While most, if not all, teams had their entire battery supplies charged before they took them into the infield, all the teams used the DieHards to "hit" the battery packs one more time before putting them in at the next pit stop.



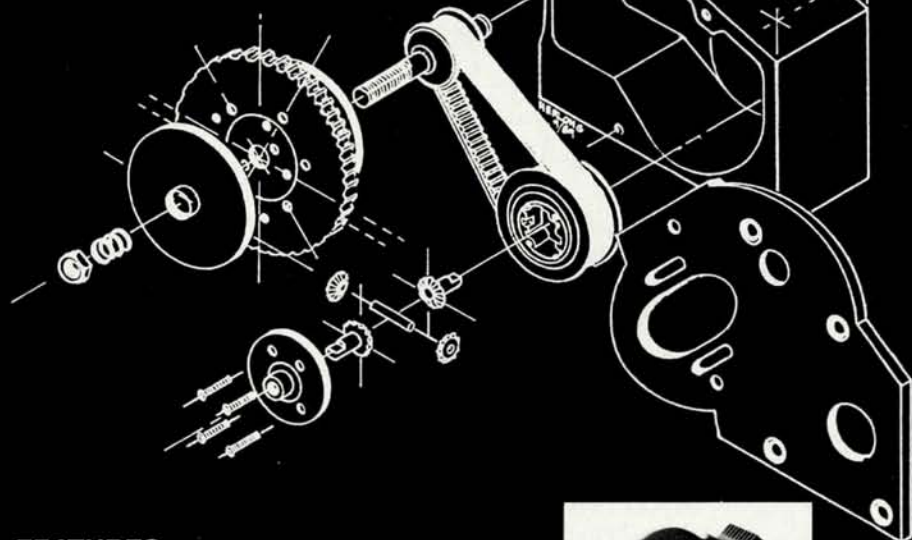
Kent Clausen interviewed teammate Shawn Ireland after Ireland's Pro Modified victory.



The pizza-by-the-slice crew also handled pitting for the Noid's race car.

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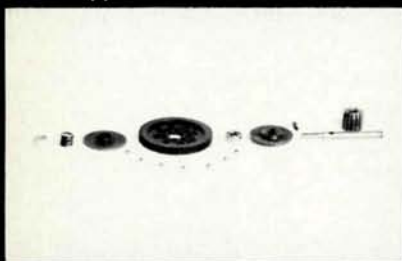
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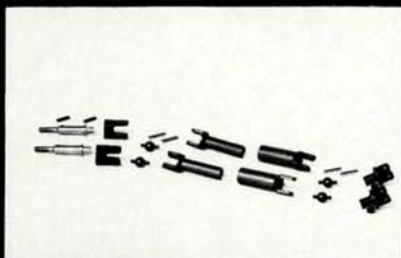
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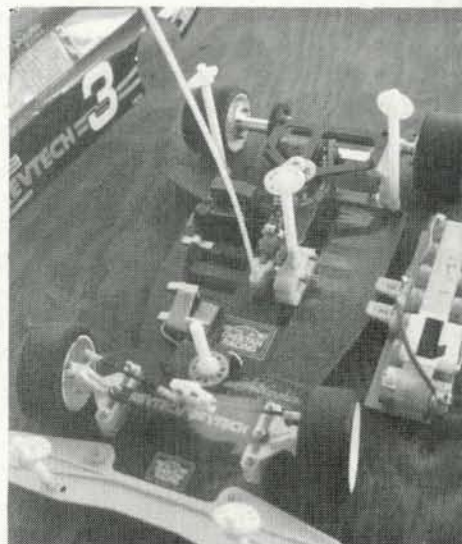
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THUNDERDROME

The race flyers from Domino's Pizza seemed to help draw the crowd to the event. On Sunday, there was standing room only most of the day around the huge oval. Many of the winners of the door-prize car kits had never been to an R/C car race or owned an R/C car. It was reported that spectators had to park three blocks away on Sunday. Cerwin Vega provided two, huge Earthquake



Associated's 10L can easily be set up for oval track Superspeedway Racing by using Cheetah Racing's QC/DC system in LTO fashion.

speakers that made it easy for the spectators to hear all of the colorful commentary that was provided by Gary McAllister, Dan Moynihan and Hal Sanguinetti.

We at *Radio Control Car Action* would like to thank our co-sponsors: Dan's RC Stuff, McAllister Racing, Domino's Pizza, Sears, and Cerwin Vega. We'd also like to thank all the companies that provided prize donations: MRC/Tamiya, Panda Cars/Global Hobbies, Futaba, Tekin, Autographics, Bud's Racing Products, Bolink, Twinn-K, Hyperdrive, Scat Racing Products, Parma, J-Car, Kimbrough Products, Edge Products, Thundercar, Pro Proven Products, Progressive Technologies, Product Design Inc., C&M, Paragon, B&R Motorworks, Quarter Flash, Radio Control Model Cars, Cheetah Racing, Energy Concepts Inc., and CKW.

The Second Annual RC Thunderdrome was a great success. The Radio Control Car Action East-West Shootout is underway, and the Noid is hooked on R/C racing.

TROUBLESHOOTING

by FRED MURPHY

End-of-Season Maintenance



IF YOU'RE STILL racing outdoors, make the most of it! It won't be long before winter forces you inside—or into temporary retirement—but this gives you time to rebuild and clean your equipment. This article is not only aimed at R/C beginners, but it's also meant to refresh the memories of advanced racers, who will surely agree that equipment must be taken care of.

This is the perfect time to make the hot suspension change your competitors have already made (at your expense!), or to install and test that new transmission. It's a great time-out period when you can add the little extras that make all the difference. My discussion applies to all cars and, because of this, some of you might think parts of it are oversimplified; but if you need more details on your particular car, refer to the assembly manual. This is a back-to-basics bulletin!

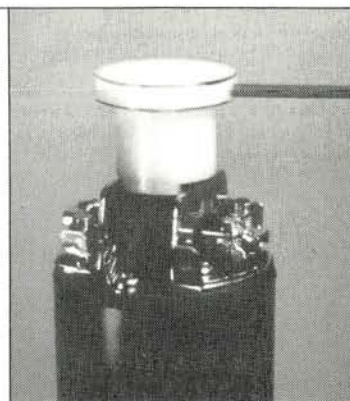
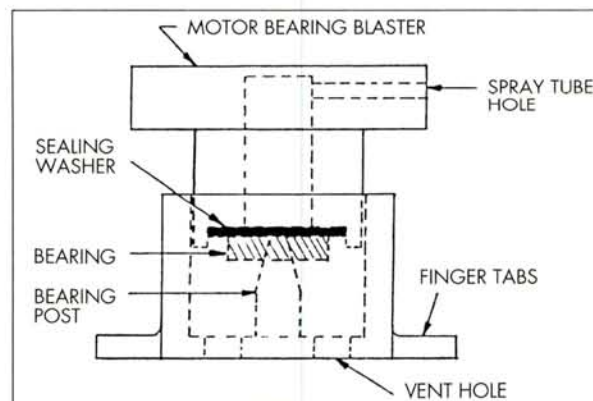
First, dismantle the car and remove the radio system. We'll rebuild the car from the bare chassis, starting with the radio system. On your work area, lay out the servos, the receiver, the switch harness with receiver batteries (if you aren't using a BEC system), and the speed con-

troller. Clean all the components with a soft, dry cloth, or a soft dusting brush. (A small watercolor paint brush is good for this job.)

If your radio system has receiver batteries, remove them and make sure that the battery contacts are clean, because dirt in this area can cause many problems. If the battery contacts are dirty, use a piece of fine sandpaper or emery cloth to remove any rust or dirt that could hinder your performance. Never store your radio system with alkaline batteries in the re-

ceiver or transmitter battery boxes, because these batteries leak occasionally—and I'm sure you don't need me to tell you why you should beware of that!

If you use a BEC system with a mechanical speed controller, now's the time to completely inspect and clean it. Look for signs of any scoring on the controller's surface plate, and check for signs that the wiper arm is worn. Once again, a small piece of fine, abrasive material will remove rust and dirt, but if the controller's surface is *deeply* scratched, replace it now



Cheetah's Blaster Plus is good for cleaning motor bushings or bearings. It will work with the motor fully assembled, and there's an adapter to help clean the bearings if they're removed. The line drawing shows how the Blaster Plus works with bearings removed from the motor.

TROUBLESHOOTING

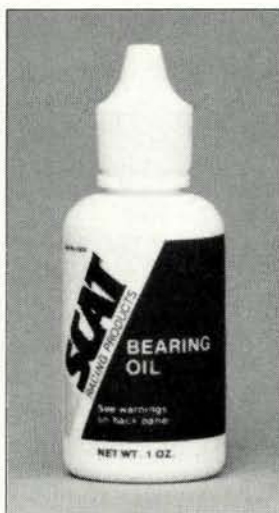
to save yourself countless headaches later.

Check the radio-system's wiring for harmless-looking insulation cracks or breaks, which might not look serious now, but can later cause glitches. Do the necessary repairs *now*. The servo and switch connections on the receiver should also be cleaned or replaced; skimping here will eventually catch up with you.

On to the gearbox and drive train assembly: Clean and inspect them. First, remove the motor and inspect the wiring to ensure that the connections are clean and in good condition. Next, inspect the pinion gear to see if the gear teeth are worn; if they are, replace them. Then take apart the gearbox, remove all the gears and bearings and clean them.

To de-grease plastic parts, use a solution of warm water and mild soap, or you can use alcohol, which is always very effective and doesn't damage the resin plastics in today's cars. To clean the bearings, use your favorite motor spray to flush out any dirt in the housing, or use a bearing-cleaning device like the Blaster

RaceSolv is one of the many cleaner/degreasers that can be used to clean bearings and other metal parts on your car. Avoid using these sprays on plastics, unless it's specified on the can that it will not cause any harm.



After thoroughly cleaning the bearings for winter storage, a dose of bearing oil should be applied to prevent corrosion.

Plus from Cheetah Racing*. Whichever you choose, make sure that the bearings' casing isn't damaged and that movement isn't restricted, because any wear or binding you notice now will probably cause greater problems if it isn't taken care of. If they're worn, replace the bearings now, and re-lubricate them after cleaning (you don't want them to corrode in storage).

When the gearbox housing has been cleaned, inspect it for any abnormal wear or cracks in the housing. Many modelers omit the housing inspection, even though this area can be the source of big-time performance problems. Check the gear teeth for wear, and replace them if necessary. If your car is equipped with a ball differential, check the thrust bearing, the diff balls and the diff rings; if they're worn, the differential won't give its best performance.

When it's time to reassemble the gearbox, have your car's assembly manual handy—just in case! I know; you can assemble it in your sleep, but isn't it better to be safe than sorry? (Do I sound just like your mom?) To re-grease your gearbox, you can use a grease from your local hobby shop, but I've used automotive wheel-bearing grease for years. It has the staying power needed by today's high-tech differentials, and it has proven to be outstanding under all conditions.

Moving to the front of your car's chassis, wash and de-grease all the components. Carefully inspect the A-arms for cracks and wear, and check all the bushings and bearings. Make sure that the tie rods aren't bent and that their ends aren't worn or damaged. Replace any worn parts and reassemble the tie rods, using grease at all points of movement.

As for the shocks, if you want to maintain your car's sure-footed handling, replace the shock oil and check the dampener parts. If you detect any binding in the shocks, replace the O-rings and make sure the piston rod isn't damaged or bent.



With your car's transmission completely cleaned and ready for re-assembly, give the gears a coat of a high-quality gear lube.

If you try to straighten a bent rod, please be very careful, because if you scratch it, you could cause a leak or damage internal parts, and these will drastically hinder suspension performance. If you can find replacement piston rods, buy them rather than trying to straighten bent ones.

I hope that these reminders about cleaning major components will be helpful. *Don't* let your car sit around all winter and then decide it's time to clean it the day before racing. Clean it now, and you'll be ready when spring arrives. *Good luck, and happy motoring!*

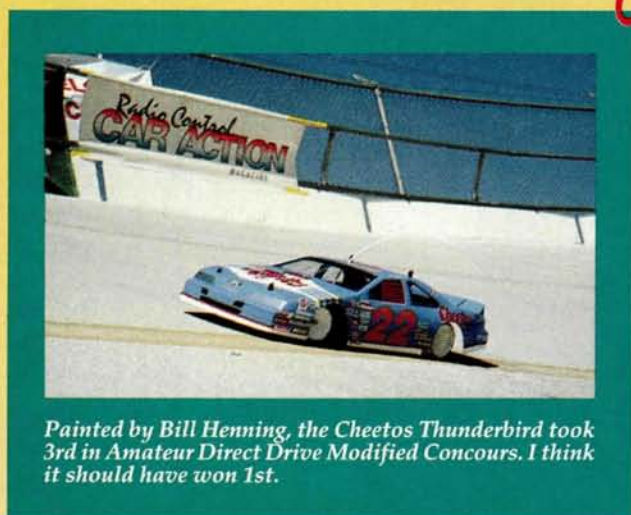
**Here's the address of the company mentioned in this article:*
Cheetah Racing, 10823 Amestoy Ave., Granada Hills, CA 91344.

Here I am, on the drivers' stand.
It was difficult to see my car on
the back stretch, but I didn't have
any radio troubles.



I SURVIVED THE THUNDERDROME

OR



Painted by Bill Henning, the Cheetos Thunderbird took 3rd in Amateur Direct Drive Modified Concours. I think it should have won 1st.

by WALLY DAVID

"HEY! GREAT IDEA, WALLY! Go for it!" Almost before I knew it, I'd let myself in for some extra work—again! When the Ayatollah decided that Rich Hemstreet and I would go to the Thunderdrome races, I offered to write an article from my perspective—the event as I saw it. I wanted to give you a taste of what it's like to compete at a big race, so read on to find out how things went for me. Along the way, I include some hints that saved me money or just made the experience easier.

Get Ready...

I was going to California! They had to tie me to my chair to keep me at my desk! First things first—needed an entry

HOW I CRUSHED A BLUEBERRY MUFFIN!

form, a copy of the rules, and an event schedule. Since drivers were limited to one class

and I wanted to go fast (what else!), I entered the Amateur Direct Drive Modified Class.

Needed a plane ticket. No bargains *there!* Nine hundred dollars for a round trip from LaGuardia, NY, to Los Angeles. Gulp! Called around; "Did you say \$400?" Just think of all the R/C

goodies I can buy with the \$500 I saved.

Hint #1: Check around for the best airline fare; don't take the first one quoted. My travel agent explained that airlines occasionally have bargain tickets that don't show up on the agencies' computers, and that's why I found such a discrepancy in the fares. (Since I saved the Ayatollah money, he's sure to send me to other places!)

Needed a hotel room. For most big races, promoters usually arrange group rates at some local hotels. I looked at the list of hotels and made a reservation at the one with the lowest rate.

Hint #2: Call the hotels that offer special rates for the race. Their rates can differ by as much as \$30 a night.

Needed a rental car. You guessed it! By calling around, I got the best price.

Get Set...

Had to get my car and equipment ready! Batteries! The event rules stated that the Modified Class drivers would use 7-cell packs, so, to see if the four packs I had were good (hadn't used them for some time), I used my Turbo Charger to cycle and rate them. I bought three new Twister Premium Matched SCE 7-cell packs, thinking that seven packs would give me all the power I needed for practicing and racing. As I'd suspected, three of the packs weren't too great, but one was right up there with the *new* Twister packs, so I actually had four good packs. The big problem with 1700s is that they shouldn't be charged



Ricky Jordan holds my 10L while Bud Bartos prepares to zap my batteries with his mysterious blue box.



Marshalls didn't have to do much. The turns were so steeply banked that the cars just tumbled down off the track and into the infield. I had plenty of time to lament the loss of my crushed blueberry muffin!

within 24 hours of use, so I had to do some planning.

The schedule called for open practice on Thursday, two qualifiers on Friday, two on Saturday, and the Mains on Sunday. I'd probably use three of the four older packs during Thursday's practice, and make one final practice run with one of the new packs, to make sure I had the gearing right. I'd then be able to run two new packs on Friday, and this would allow them to be discharged and "rested" until Sunday's Main. I planned to use my best older pack and my final new pack for the qualifiers on Saturday, and for Sunday's Main, I'd use one of the two that had been run on Friday, so I wouldn't be using a pack

of battle, and if I didn't figure things out ahead of time, something might go wrong.

Hint #3: Plan carefully! You can think much more clearly when you're at home than when you're harried and tired at the track. Then,

when you've reached the track, you can put all your efforts into getting the car to handle well.

Since I'd never raced at an R/C super-speedway and was awed at the idea of competing at the Thunderdrome, I asked Mike Walker, the owner of Twister Motors, which motor would be best for the track. He said his drivers would be using the "Flash," which is a 14-turn triple, so that's what I went with.

Hint #4: Don't be afraid to call manufac-

turers for advice. Try to be as informed as possible, and have your questions written down, to reduce your phone bill, and save the manufacturer's time. They're eager to help you, because if you're happy with their product and advice, you'll come back to them the next time you need to buy

something.

Had to get my car ready! I've been doing a lot of concrete-oval racing, so I knew my car didn't need

much work. I checked my Associated RC10L for signs of wear and decided to replace the steering blocks, which had developed some slop around the kingpins. I stripped everything off the chassis and cleaned it with rubbing alcohol, and I also cleaned all the bearings. After putting the car back together, I mounted the radio gear. I wanted my car to be ready to go as soon as I reached the track, so that I could make maximum use of track time.

Hint #5: Do as much work on the car as you can before you leave home; it's easier to find broken parts when you take your time at

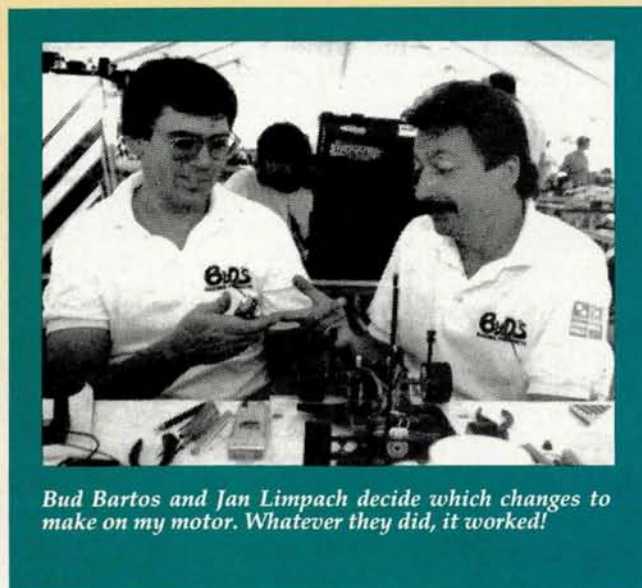


On the start, I was very careful not to apply too much throttle. As a result, I got a smooth takeoff and didn't spin.

home, and to find replacements at your local shop. You don't know what you'll find somewhere else.

The rules called for Grand National bodies, so I gave an Associated Chevy Lumina one of my best paint jobs and did a 20-minute job on an Associated T-Bird, just in case. Bill Henning, of Henning Scale Models in Lansdale, PA, was working on a T-Bird that I could enter in Concours. I wanted to practice with the spare T-Bird, in case Bill's paint job won something. Since the winning cars had to run the Concours bodies in the Mains, I didn't want to put the body on the car without knowing if it made a difference to the handling and possibly jeopardizing my chance for a good finish.

Had to pack everything and make sure my precious cargo reached California intact, so I used



Bud Bartos and Jan Limpach decide which changes to make on my motor. Whatever they did, it worked!

within 24 hours. (Brilliant, eh?!)

Why go through all this trouble beforehand? Because I know that I might get a little frazzled in the heat

I SURVIVED THE THUNDERDROME

an Advanced Race Case, which has a plastic insert that shields its contents from impact. A 50-pound toolbox obviously isn't fun to lug around, so I packed only the most essential tools: nut drivers, ball drivers, a few screwdrivers, pliers and a soldering iron. My supplies took up more room. (It's easier to borrow a tool than to borrow a spur gear or a bevel washer for your particular diff.)

Hint #6: Take only the tools that are essential for the maintenance of your car. You don't need to carry a machine shop, but stock up on spares and supplies, which will be harder to buy or borrow at the track.

I put my small toolbox in the Race Case, put the car on top of the toolbox and stuffed the sides of the case with tires and rags for a little

extra padding. To protect them from airline gorillas, I wrapped batteries, chargers and transmitters in my clothing, and anything that might look suspicious on an airport X-ray machine was packed in my suitcase.

Go!!!

Wednesday!—the day of the trip! Traveling with white-knuckle Hemstreet, I hoped for a great in-

flight movie to take his mind off the miles between us and the ground. Connecticut thoroughway; New York grime; airport bustle; dazzling white clouds; a great movie; and a safe landing—California!

Prudent Practice

Thursday: time to practice. No jet lag even after only three hours of sleep. We wanted to get to the track very early, and although I felt fine at first, the lack of sleep would catch up with me later.

First things first: We claimed a pit table for the weekend, surrounding ourselves with good company, including Bolink's Rick Jordan and his son Ricky, and Bud Bartos of Bud's Racing Products and CAM Motors.

Next, I charged my batteries so that I'd get going quickly, and after peaking my first pack and taping it into place, I headed to the track for my first attempt at high-speed, high-banked racing. I got the frequency clip, turned on the transmitter, then my car, and I put the car down at the topmost edge of the track. I punched the trigger, and then did loops down the banking and into the infield. That was fun, but I wanted to make a little more progress, so I rolled the car in the proper direction and slowly ran it onto the banking and headed into the first turn. Before I knew what was happening, I was doing loops again. Then it hit me; I took a good look at my car (which seemed to be two miles away!) and saw its Bud's Wing was missing. In my haste to try the track, I had left my wing sit-

(Continued on page 82)



It was safer and easier to pass on the high side. There was plenty of room up there, but above the red line was where angels feared to tread!

HELI HERO



Ranger—NO DOORS!—I had an uncontrollable smile on my face—a stupid grin that just wouldn't go away.

As we headed toward the track, I began to enjoy myself, and by the time we were over it, I was even confident enough to lean out! Everyone down

there looked so *small*. A guy wearing green glasses and green sneakers gestured to me, but I couldn't understand what he wanted; and boy! Rich sure looked funny splayed out on the track taking pictures of the Parade of Cars.

I later discovered that the gesticulating guy in green was Bud Bartos, who had apparently been suggesting that if only I'd jump out of the helicopter, I'd get some really good shots. What a pal!

ALTHOUGH RICH was responsible for covering the race for *Car Action*, I was to go up in our rented helicopter to take aerial shots of the track. (Of course, Rich refused to go!)

The company from which we'd hired the heli is the one that built and flew Airwolf for the popular television show, and it was responsible for the helis in the movie *Blue Thunder*, so I had no reservations. (Yeah, right!) As the pilot strapped me into the Jet

ON THE SCENE

by WALLY DAVID

Bud Bartos: The legend lives on.

"The Legend of Lake Whippoorwill"—that's how many people refer to Bud Bartos. For mastering the concrete oval at Lake Whippoorwill International Speedway and for his fluorescent green glasses, shoes and paint jobs he has become a living legend.

The "legend" began 11 years ago, when Bud won a merchandise certificate at a slot-car race, which was held at a track where R/C cars were just becoming popular. He traded in his certificate for an Associated 12E, and the rest is history!

Bud began to hone his skills in the Midwest, and he increased his level of competition until reaching the national level, where he has never won a national championship, but has often taken second and third. The "bridesmaid" label was finally removed when Bud won the 1/12-Scale Stock title at the '84 IFMAR World Championships in Denmark. He has since won two of the four enduro races at Lake Whippoorwill, as well as other 1/10- and 1/12-scale on-road and oval races. In '89,

cause he painted his slot bodies "day-glo" green to help him see the speeding cars. (The blur of color was often the only thing that distinguished one car from another.) Bud's use of bright color naturally carried over to radio control.

Bud says he prefers R/C racing. "Slot cars are OK, but they just got real high-tech. If you didn't do it constantly, you were just behind." He also feels that R/C racing requires much more skill, and that it's more closely related to full-scale racing.

When asked if he thought that R/C was also getting too technical, Bud said, "Electric, primarily 1/12 scale, is getting to the point where you need a computer system at the race to keep track of the batteries." He feels that batteries account for 70 to 75 percent of the outcome in 8-minute, 1/12-scale races, but that they're less important in 4-minute races, where there's much less emphasis on batteries.

In fact, at the start of last year's 1/12-scale indoor season, Bud suggested to ROAR that the races be shortened to 5 minutes. Everyone seemed to agree that races should be shorter, but most seemed to feel that 7 minutes was short enough. Says Bud, "That proves no point. Half the

people can't make 7 minutes anyhow, and still go fast. By going to 5 minutes, emphasis would be back on driving, instead of on batteries. I make my living at this. I'm not the guy who does this as a hobby, spends hundreds of dollars on bat-



As usual, the racer (Bud Bartos) gets the girl, while the pit crew (Jan Limpach) gets the Noid!



Bud helps Bolink's Rick Jordan to prepare Ricky Jordan's car.

he won the ROAR Region 3 1/10-Scale On-Road and 1/8-Scale Championships.

Actually, the legend started as long ago as 26 years when Bud began his ascent to the top of the slot-car scene. It was here that bright colors entered Bud's life, be-

teries and stuff, and then goes out, does his best, and doesn't even finish the race. That's the worst thing."

On the future of R/C racing, Bud is the voice of reason. He feels that promoters charge too much for entry and that, again, batteries are a major factor. "It's getting way up there, and with the battery thing, I see a lot of people, at some point, getting disgusted with it. There needs to be more fun put into it. It's almost the way I saw slots go out of popularity."

Bud sees a bright future for oval racing—it's exciting and lots of fun. You can race side-by-side and follow someone (unlike on a roadcourse, where following another car is difficult to do without touching it). The only problem with oval races is that they become horsepower wars.

As for the pro class, Bud thinks that it's about two years overdue. "Some people scream that pros killed slot racing, but as far as I'm concerned, they didn't. What killed slot racing was the lack of rules to fix prices on things like motors. You were able to buy a slot-car motor for \$5 one week, and the next week they were up to \$25, and the next week to \$75! That's where R/C racing has an advantage: They

(Continued on page 79)

ON THE SCENE

(Continued from page 76)

have price limits on motors.

"For the last couple of years, you've had amateurs competing with professional drivers in the same races, trying to win the same 1st-place trophy. Ideally, even though you're in the middle of that group, people still have a little hope that, 'hey, I've got everything together, and I'm going to do well and make the A-Main.' But realistically, they don't have a chance."

Bud suggests that pros race for money. Many people claim that cash prices lead to cutthroat behavior, e.g., people turning on radios in the pits and blocking other cars to give their teammates an advantage. "It happens all the time right now." To the companies, winning the trophy at a national event is just as good as winning money, but cash means a lot to drivers, especially those who don't work for a large R/C company. As a small business owner, Bud can't afford to go to a track and practice for a week before an event. He often can't get away in time to practice right before the event, and he usually arrives on the day of qualifying.

If, perhaps, \$10,000 were up for grabs for first, it would make the race much more appealing. Higher stakes would also attract the interest of major outside sponsors and television, and this would lead to increased support for the sport. Running for money would also make it easier to distinguish the pros from the amateurs—a distinction that Bud currently finds it difficult to make. "It's a tough thing to do, and I think that's part of the reason why nothing has ever been done. But if you had a pro class, you'd have guys who were running in the E- and F-Mains now running in the A- and B-Mains—and feeling good."

Most famous for his Bud's Bi-level Wing, his list of products includes serrated setscrews; diff balls and rings; silicone lube; pre-bent wing wire; wing mounts; and a new line of motor brushes, called "da-brush," which have unique cuts and slots.

At one time, Bud could be seen cutting and bending wings for sale at the track, but he doesn't do it now. Next spring, look for Bud in a full-scale race car! He plans to race in the SCCA Street Prepared Pro Solo Class, where he'll race on a roadcourse made of pylons, while another driver races on a "mirror" image of the course. The objective? To be the first one to finish—a real test of a driver's skill.

And what color will his VW GTI be? Green, of course!

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DIRT DIGEST

by BOB KANE & BILL O'BRIEN

Keep Your Frog hoppin'

"MY FROG'S BEEN discontinued! What am I gonna do? Where can I get parts?" There's nothing more disturbing than finding out that your favorite R/C car has just gotten the axe. Unfortunately, that's what has happened to Tamiya's Frog, and *Car Action* has already received some panic-stricken letters.

Well, you might not be able to buy a Frog at your local hobby store now, but you really shouldn't worry about maintaining the one you own—at least, not for a while.

Parts is Parts

The official part number for your Tamiya Frog (an entire box of parts ready to put together) is 5841. What makes your car different from most others is its chassis, which is a very old design that was built more for strength than anything else, so the Frog would survive the effects of gravity on falling bodies.

The skeleton of this strong and uncomplicated design is an excellent framework on which to hang a truck body, and Tamiya has done just that. Lift up the bodies of the Blackfoot, the Monster Beetle and the brand-new Mud Blaster, and you'll see the same old chassis that's on your Frog.

The original Frog chassis part no. is X-7811, and the parts tree it grows on includes the end caps for the battery compartment as well as the battery compartment door. The substitute version, for Tamiya's truck series, is part no. X-9936. The only difference I can find is that the truck chassis is red (the original was gray).

The metal parts are an area for concern: They can rust, bend and break. The original pressed parts bag (part no. X-9952)

contains the gearbox plates, front arm stays (the little, sideways, metal U that holds the spindles) and a few more goodies. (The trucks use a larger arm stay, and this can be adapted to the Frog.)

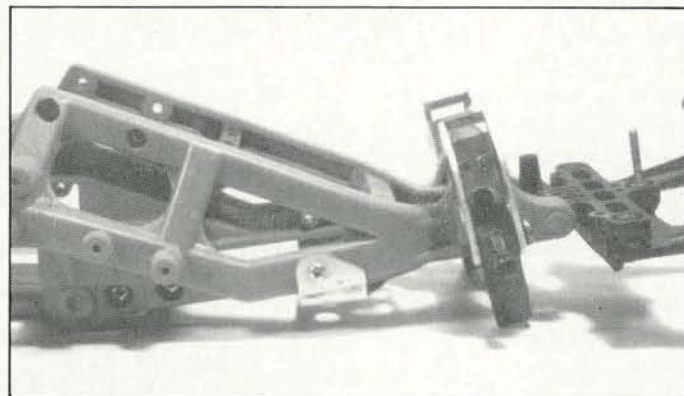
I went through two sets of "H" parts (the wonderful, black front-suspension arms) and finally switched to the CRP version with the metal inserts. If you simply *must* have the original, it's no. X-7826 (the same number for the Monster Beetle and the rest).

Have you ever lost the little rear axle pins that lock the wheel-mounting block into place? You can make one from a steel paper clip, or you can buy them (no. X-10000). If you've cracked the entire rear-

wheels. Different assemblies are used for different wheel widths and offsets (ever try skinny wheels on the back of your Frog?), and a pair, including the correct hubs for the Frog, shouldn't set you back more than 10 bucks; then you can mount 2-inch tires.

If you want to try something really strange, find some SP-1156 and SP-1156R Ford Ranger tires. They're on the discontinued-vehicles' parts list, as is the Ranger itself, so they might be a little scarce, but they're great, treaded tires for hard-packed dirt terrain.

That covers many of the OEM (Original Equipment Manufacturer) parts. I haven't even touched on after-market parts suppliers, like CRP, which can provide you with add-on parts—everything from bumpers to tires. There's even an adjustable motor mount that will let you use a variety of pinion gears without disassembling your diff to replace the stock Frog center gear. Many other suppliers offer a large selection of Frog paraphernalia—everything from side nerf bars to Hot



Don't worry: You'll still be able to buy a replacement chassis for your trusty Frog. The Blackfoot/Monster Beetle/Mud Blaster chassis is the same thing, but red.

suspension arm (or stripped out the hole for the shock-absorber mount, as I have), you can replace it with the "B" parts set (no. 7812) from the truck side. If you crack the entire gearbox, you can replace it with a new one from the "C" parts (no. X-7813), and you can even get all the screws and nuts needed to fully assemble it from nos. X-8416 and X-8418.

Wheels and tires are always a quick-change decision, and you really shouldn't leave those tiny wheels on your Frog when so many combinations are possible. If you want to stick with Tamiya wheels, get the mounting blocks from the Thunder Shot (no. X-10113). They mount right onto your axle in place of the Frog blocks, and they give you a more modern base for a wider variety of tires. My favorite are the modular Bru-Line Super System

Trick's complete re-do of the Frog chassis and steering assembly.

I once got into a "discussion" with Gene Husting of Associated fame: I claimed that, given enough money (about \$350), I could make my Frog as good as a stock RC10. Granted, it's a lot cheaper to just buy the RC10, but if you've already invested some money in a Frog, it's difficult to cast it aside.

(Before I get outraged letters from a gazillion RC10 owners, remember that, at that point, the Frog will have reached the limit of its performance. A stock RC10 is at the *beginning* of its performance potential and can be expanded well beyond the limitations of the Frog's design.)

So if you're afraid of losing your Frog, forget it. As long as there's a Blackfoot, or as long as Tamiya keeps coming out

with "new" trucks like the Mud Blaster (anybody remember the Subaru Brat?), you shouldn't have difficulty keeping it running. When you finally decide to retire it, use a little imagination to make something completely different from the parts you have.

Alien Notion

OK, I'm weird, but I'm also a manic tinkerer. I want to have cars with parts that I can swap when necessary, and because I own cars from Tamiya, Kyosho, MRP and Marui, as well as the odd couple (the Alien and the Invader) from Hirobo, this isn't always possible. Most irksome is the limited selection of 1.6-inch tires. I can get almost any tire for my Kyosho models, and after-market wheels make it possible to do the same thing for my Tamiya cars, but Hirobo's 4WD twins use an oddball wheel-mounting system that isn't supported by the after-market industry. Solutions, however, can be found in strange places.

When I'd finished mounting Tamiya Avante wheels to my stretched Optima Mid, I had four drive washers left over and nothing to do with them. To me, that's a waste of parts! I started experimenting, and I found that if you remove the Alien wheels and leave its drive washers in place, you can slip the Avante drive washers right over the axles. You can then mount Avante or Kyosho wheels on the Hirobo car. This would usually change the wheel offset, too, but the difference created by the extra drive washer is almost totally negated by the different offset of the Kyosho or the Avante wheels. (You'll actually decrease your track slightly with the Avante wheels.) Groovy, huh?

Track Tip

Quarter-scale cars are very popular among a certain group of racers. They're somewhat expensive, but if you add up all the money you've spent in the last two years on your RC10 (I know I keep picking on the car, but it's good enough to deserve it), you might match the \$1,000 1/4-scale entry ticket. I even own a RACO JacRabbit.



By putting the Avante drive washer over the Alien axles, you can mount Avante or Kyosho wheels on the Hirobo car.

The engines used in these cars run on a gas/oil mixture, just as your lawn mower, chain saw, or motorcycle does, and they have their own on-board ignition system, which includes a spark plug. The folk at Bruckner Hobbies told me that there's some concern about the AM receivers and the ignition noise from the spark system used in these cars.

Although resistor plugs help immensely (and are usually recommended), there's a slight chance that your AM system can take a hit from the noise, and this could put the car briefly out of control. Because of the size and mass of 1/4-scale cars, any loss of control can have severe consequences.

Currently, the safest radio system (in

you'll pay if you lose control of your 1/4-scaler and it hits a bystander.

Yes, you can now convict me of using scare tactics. No, there's no widespread incidence of berserk, AM-controlled, 1/4-scale cars running amok, but the 1/4-scale segment of the R/C world has been relatively small, and its members have always been obsessed with the maintenance of their high-dollar toys. The group is growing; everyone's capable of making mistakes; and all it takes to ruin your day is one nasty accident.

Next Month

Long before you read this, you'll have seen Tamiya's new Egress, and there's also a well-kept Hirobo secret: the Jealousy. Those two cars represent a new level of off-road sophistication—and price. I think these are just the start of a new generation of limited-production, megabuck exotics. Don't worry: They break just as easily as the cars you and I can afford. Fodder for the column!

Next month, I'll take a look at some suspension tricks for the Thundershot and the Rampage. Although these cars come from two different segments of the off-road market (electric and gas, respectively), they have a common problem.

Speaking of problems, if any of you are also fliers (yes, there is a crossover) who are familiar with fan-jet systems (that should shorten the list), I have a favor to ask you. I need some thoughts on a fan-jet



With Avante drive washers, these wheels can be mounted on Hirobo cars.

fact, it might be overkill for a properly functioning 1/4-scale car) is a PCM (Pulse Code Modulation) radio—especially one with a fail-safe, shut-down system. Both Futaba and JR offer PCM 2-channel radios on surface frequencies. While it may increase the cost of your radio system by 50 to 100 percent, neither radio costs as much as an X-ray and a cast for a broken leg, and the price is only a fraction of what

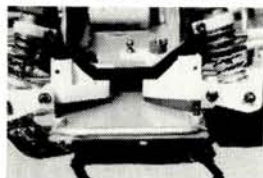
system (Dynamax, Jet Hangar Hobbies, Kress, Violet, whatever): I want to know the best ducting and exhaust approach for a system that will be installed in an enclosure no wider than 6 inches (preferably 4 1/2 inches) and no longer than 22 inches. Aerodynamics is no problem: The model isn't intended for flight. This is, after all, "Dirt Digest"!

Think about it! See ya next time! ■



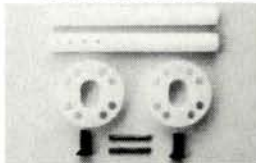
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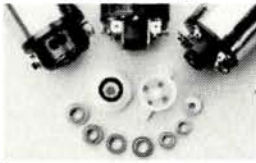
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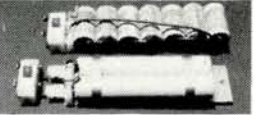
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I SURVIVED...

(Continued from page 74)

ting peacefully on the pit table.

Hint #7: If you don't want to look silly, be sure to have things like batteries, bodies, wings and wheels attached to your car before you leave the pit!

Back to the track for more fun and games. This time, the car ran five laps before coasting to a stop under the timing bridge. Its pinion had loosened, chewed up the spur gear and leaped to the safety of the infield grass, never to be seen again.

During the five laps, the car felt pretty good. Because of the steep banking and wide turns, very little steering was needed, and I didn't even *think* about letting off the throttle! Driving at the 960-foot Thunderdrome is like watching a race on television. Your car is so far away that it doesn't seem to respond to your transmitter. As my car hit a bump, became airborne and flipped over, I imagined I could hear TV racing announcer Chris Economaki say, "Oh no! Wally David has flipped and crashed, but I see him moving around inside the car, thank heavens!" It was like nothing I had ever experienced!

With a new set of gears, I headed out to finish off the rest of the pack, and the

(Continued on page 96)



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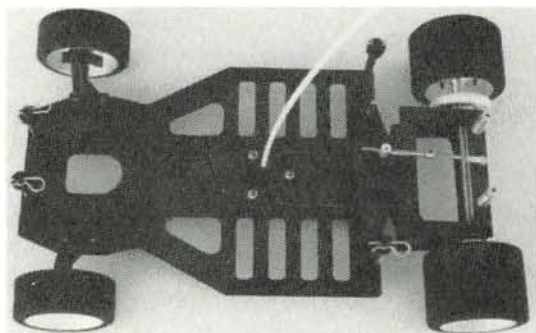
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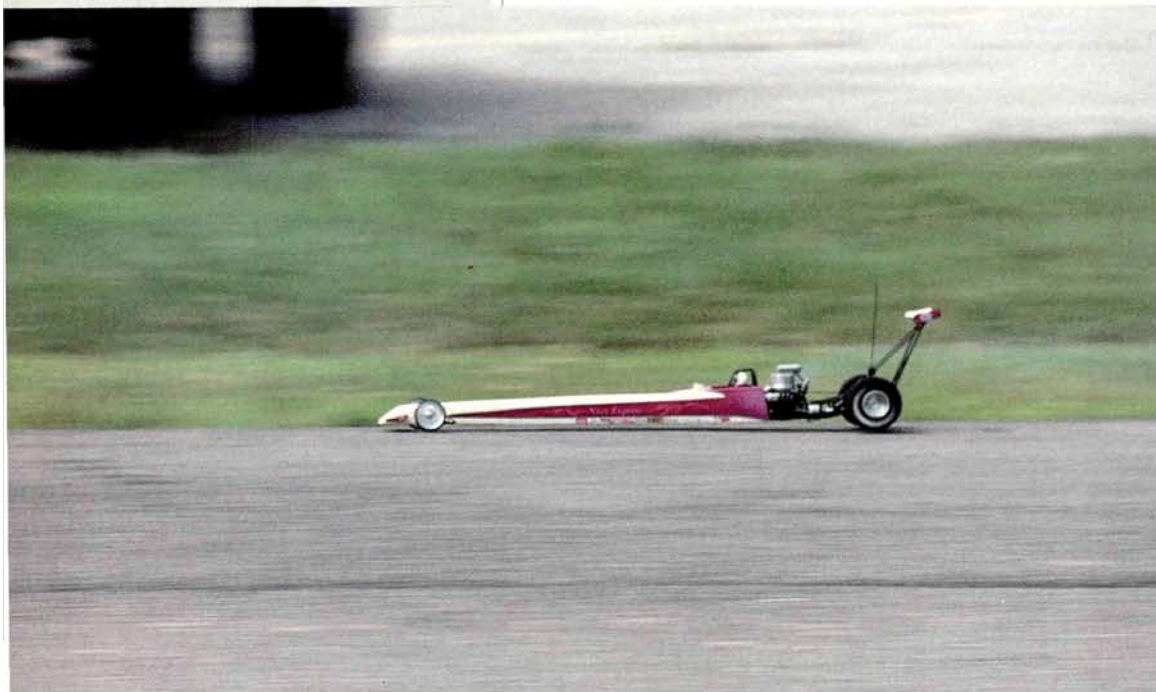
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by JOHN FAWCETT



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ANYONE IN TOUCH with automotive racing has undoubtedly witnessed the wild action of drag racing. Every aspect of this sport pushes both driver and machine to the outer limits. The monster block engines of the nitro cars run with a crackling thunder that would rival even nature's best boomers. Pumping out an inconceivable 4000hp, these cars accelerate so hard and so fast that the tires have to be screwed or bolted to the rim to keep them from tearing off! Drivers must also endure equal punishment as the car leaves the starting line and they become compressed with a force in excess of 9Gs (enough to cause unconsciousness, if sustained).

Although all this prevents many people from ever getting into a drag machine, it's what motivates thousands of others to become involved in drag racing. Rocketing down the 1/4-mile is quite a thrill, and while most of the drag-racing population races in the bracket or street classes,

there are many who would jump at the opportunity to race a nitro-powered machine. Few spots exist for racing the nitro or top alcohol cars, however, because it's so ex-



PHOTOS BY STEVE POND

pensive. This isn't to say that those with the most money will win; there's a lot more to it than that, but the investment required to be competitive is staggering.

Today, my interest in full-scale drag racing is as a spectator, but during the late '50s and '60s, I did have a brief career behind the wheel of a drag-racing machine. I raced my Chevy-powered '39 Dodge in one of the street classes at the National Speedway in New York and, later on, in California. Like other drag racers, I always wanted to go

a little faster, but this required a large investment of time and money. A diminishing bank account, as well as a commitment to the U.S. Navy, brought my drag-racing efforts to an end. My enthusiasm for the sport still exists, but in a different scale. Through radio-control, I was able to continue drag racing, only this time for considerably less money and without the threat of injury.

Early in 1987, I began construction of my 1/8-scale AA/fuel dragster. With information obtained from the NHRA (National Hot Rod Association) and from others who are involved with the sport, I was able to draw a scaled-down version from the actual plans. With a Bridgeport milling machine and a few other pieces of machining equipment at my disposal, I set out to collect the material necessary for

which has the same properties as the material used for the chassis.

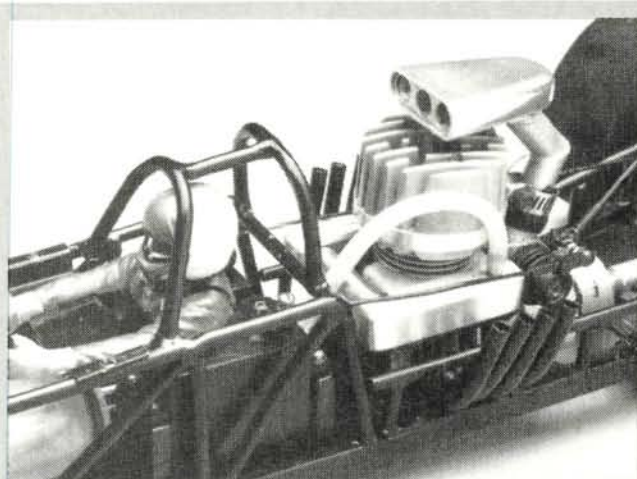
To keep the frame as straight as possible, I made a jig to cut certain lengths of rod that had to be of equal length on

both sides. Once these parts were bent, they were welded together in another simple jig to keep the parts in place during the welding process. The entire frame was welded to the chassis to form a very rigid backbone for the dragster.

Now, I had to make a pair of wheels to fit the car. Also machined from bar stock, the wheels were cut on a lathe. The front wheels have a

V-shaped cut in the center to hold the 1/4-inch cross-section O-ring front tires. The rear rims are machined flat across the entire width to accommodate the custom foam tires. Holding the front rims in place was simple with the use of a set of Tamiya* 1/10-scale wheel bearings. The rear wheels were attached to the car with a

Moody Automotive* 1/8-scale sprint-car rear end that was modified to fit in my dragster. This rear end features a worm gear drive with four interchangeable ratios to tune your car to the track's changing conditions. The ratio that seems to be best-suited to this application is approximately 7 to 1. This rear is connected to an O.S.* VF-B 3.5cc side-exhaust engine that has a fully

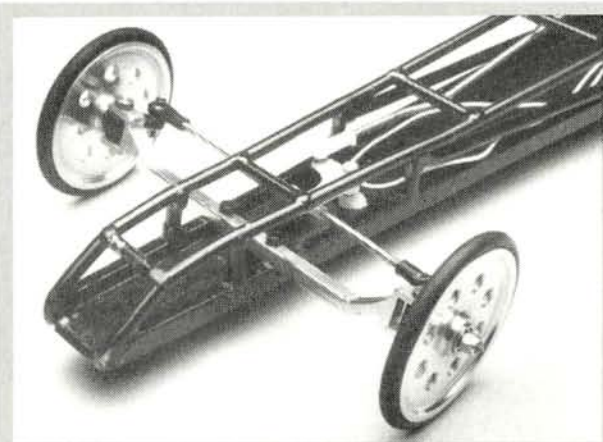


The O.S. powerplant is fitted with a custom-made, fuel-injection scoop and zoomie-style headers. These are more for scale appearance than performance, but the car still manages to get up and go!

functional, custom "zoomie" header exhaust system. The manifold transfers the exhaust gases from the engine to the collector. From the collector, some of the gases exit through the four pipes on that side of the exhaust system. A 3/8-inch transfer tube takes the remainder of the exhaust gases to the manifold on the other side of the engine, and out through the four remaining pipes. Each bank of pipes consists of mandrel-bent K&S* thin-wall brass tubing and a plate to which the four pipes are brazed. This plate is then bolted to the manifold for a great scale appearance.

To provide control for the dragster, I used a Futaba* 3-channel Magnum system. For the steering (which requires very little effort because of the minimal steering required), I used a S133 micro servo. At the rear of the car, there are two separate servos: one for the engine throttle control; the other for rear disc-brake control. By having separate servos to control the throttle and brake functions, I can hold the brake on, while running up the engine to the effective power band.

Once the dragster's innards were completed, I had to find a body, paint it, and mount it to the car. I was prepared to build my own body from fiberglass, but, fortunately, I found a vacuum-formed polycarbonate body at Bray's Engineering* and finished it with white and pink pearlescent automotive paint. Not



The front end of the Nitro Express is machined from a solid piece of aluminum bar stock and fitted with 1/12-scale steering blocks and axles.

construction.

The car is basically all aluminum, and the materials were obtained from a local scrapyard at scrap-metal prices. The entire chassis is machined from a solid piece of 1/2x3-inch bar stock, and the drop-front axle is also machined from a solid piece of stock. The remainder of the car's framework is 3/16-inch aluminum welding rod,

NITRO EXPRESS

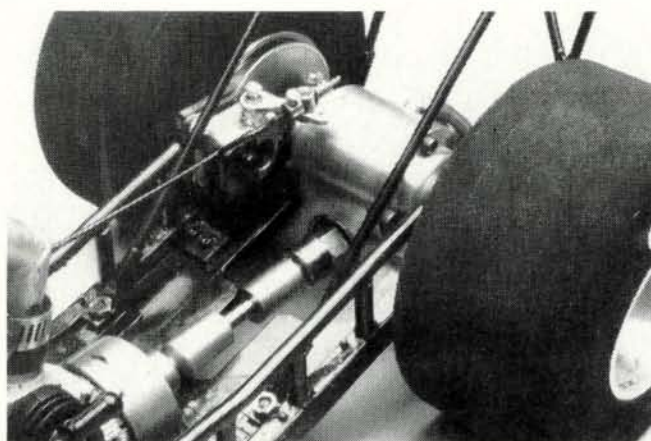
included with the body was the rear wing that I formed from sheet brass. Mounting it to the car required silver soldering some $\frac{3}{32}$ -inch brass tubing from the wing to the rear of the frame. For the front wings, I simply gathered some

scrap polycarbonate and glued it to the body, and after applying the final details, the car was ready to run.

Despite my desire to include as much detail as possible, I didn't want these details to have a harmful effect on the performance. The exhaust system could be improved with the use of a tuned pipe, which many 2-stroke engine users will tell you makes more horsepower. These engines make so much horsepower to begin with that the zoomie pipes actually have a positive effect by broadening the power band into a much more useable range.

The engine is started by using a Sullivan* starter with a car starting wheel attached. This wheel is pressed against the flywheel, which will turn over the engine. As the car approaches the line, the rear brakes are applied and the throttle is advanced so that the engine develops maximum horsepower when the car leaves the line. Running on 40-percent nitro fuel, this car leaves the line very hard, and many times it will cause the rear tires to spin. Watching the car from the rear, you can see the exhaust coming from the eight zoomie pipes. The car stretches across the 165-foot regulation track length in a few seconds, and while we haven't officially measured the top speed, I would venture to say it's in the 60mph range at the end of the track.

Now that I've run the car a number of times, I do see room for improvement in a few areas. For better performance, the clutch assembly could be more consistent or



The rear end is a shortened, Moody, 1/8-scale, sprint-car rear end with a 6-to-1 overall ratio. Note the disc-brake assembly that helps the car come to a stop at the end of a run.

even mechanically operated. The front axle, which I've broken a few times, seems to be a little fragile. These were minor glitches that were easily fixed, though, and, after working on and off for eight months in this car, these problems seemed rather insignificant.

This project reminded me of my full-scale racer: I had to pay close attention to the car's assembly to ensure that it would perform to its peak; I experimented with different clutches to see which one would give me the best holeshot; I tried different tires for different track conditions—the whole works. The project was time-consuming and expensive, but, through the miracle of radio control, I have the best of both drag-racing worlds: I can stand on the sidelines and watch the cars run, and I can drive them at the same time! Who could ask for more?

**Here are the addresses of the companies mentioned in this article:*

MRC/Tamiya, 200 Carter Dr., P.O. Box 267, Edison, NJ 08818.

Moody Automotive, 755 Ash St., Flossmoor, IL 60422.

Futaba Corp. of America, 4 Studebaker, Irvine, CA 92718.

O.S., distributed by Great Planes Model Distributors, 1608 Interstate Dr., P.O. Box 4021, Champaign, IL 61820.

K&S Engineering, 6917 W. 59th St., Chicago, IL 60638.

Bray's Engineering, RRI Box 96C, Milford, IN 46542.

Sullivan Products, 1 North Haven St., Baltimore, MD 21224. ■

NITRO EXPRESS

Type AA/Fuel Dragster
Scale $\frac{1}{8}$

DIMENSIONS:

Overall Length 42.5 inches
Width 7.375 inches
Height 9 inches
Wheelbase 29 inches
Front Track 6 inches
Rear Track 5.625 inches

WEIGHT:

Gross 6 pounds, 2 ounces

BODY:

Type Dragster
Material Polycarbonate

CHASSIS:

Type Tube frame with bottom plate
Material T-6 Aluminum

DRIVE TRAIN:

Primary Slipper clutch
Transmission Direct drive
Differential None
Bearings Ball bearings
Axle Moody Automotive

SUSPENSION:

Front: Type Drop front
Dampening None
Rear: Type None

WHEELS:

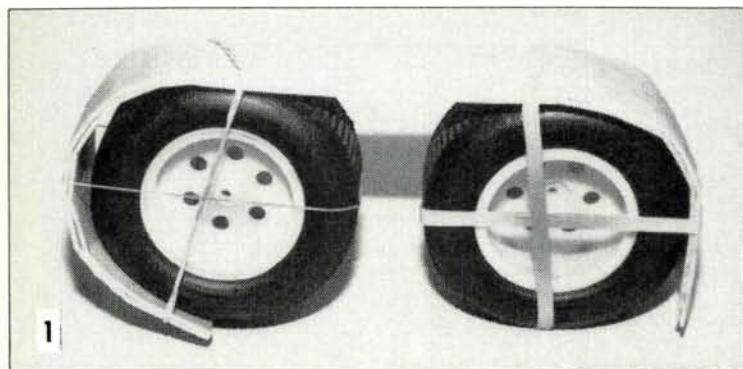
Front: Type One-piece aluminum
Dimensions (DxW) 2.125x.25 inches
Rear: Type One-piece aluminum
Dimensions (DxW) 2x2 inches

TIRES:

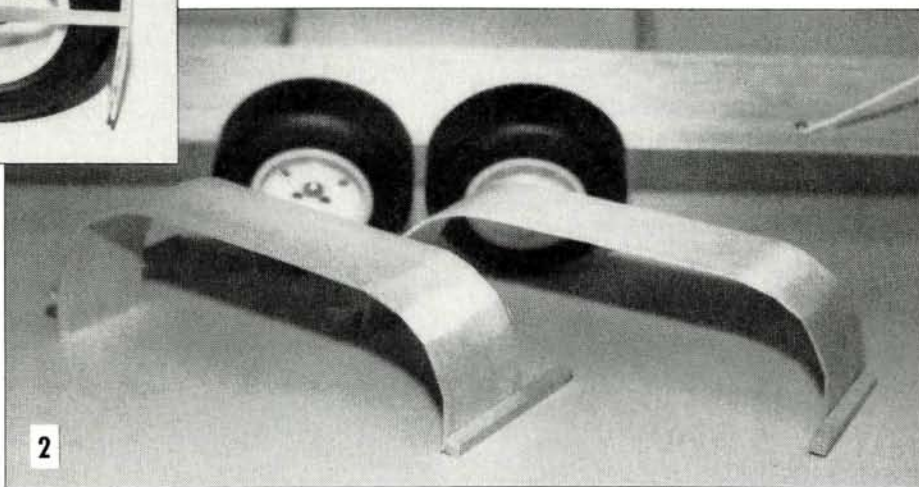
Front O-ring
Rear Cut foam

ENGINE:

Type O.S. VF-B 2-stroke
Displacement 3.5cc



Left: Wrap wet balsa pieces around tires to form fenders, and secure with rubber bands.



Right: Formed fenders with supports attached.

by JIM SHEPKA

IN THE LAST issue of *R/C Car Action*, I took you, step-by-step, through the construction of a customized trailer. By now, I hope you've completed the basic sub-frame and can move on from there.

To add to the scale appearance of this project, we must first make this rig road worthy, and to achieve this, we'll have to add fenders, a tire rack/driver's stand and running lights.

Fenders and their support posts: First, cut two 12-inch lengths of $\frac{1}{16} \times 2$ -inch sheet balsa. To form the balsa for this application, thoroughly soak both strips (back to back) in warm water for about 15 minutes to make them pliable. Take the tires from the trailer and carefully wrap the ends of both strips around half of each tire (see diagram), securing them with rubber bands. Allow the balsa to dry overnight, remove the rubber bands, and you'll see that the balsa is now curved appropriately. This step might have to be done a few times to mold the balsa to the correct size and shape.

Next, trim the fenders to the required length, then attach a balsa/plastic square to the leading edges of each fender and extend it to the undercarriage of the frame.

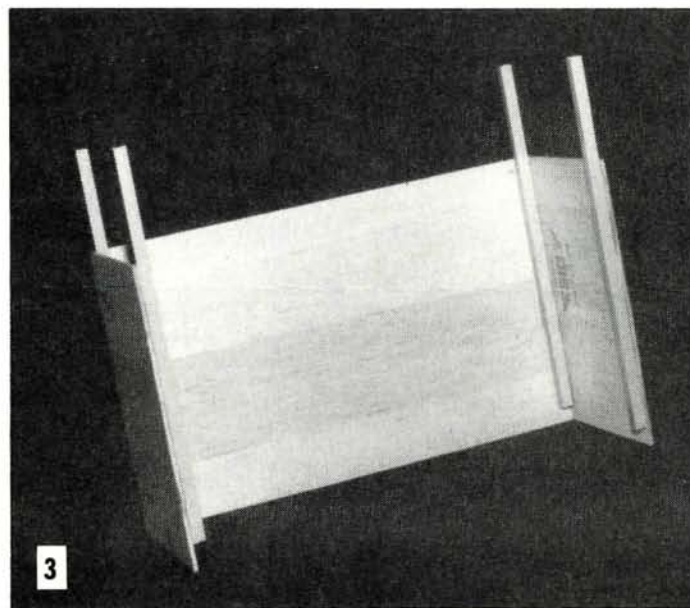
LOW-DOLLAR CUSTOM TRAILER:

The Finishing Touches

PART III

MATERIALS NEEDED

- 1 sheet of $\frac{1}{16} \times 2 \times 24$ -inch balsa
- 1 sheet $\frac{1}{16} \times 4 \times 24$ -inch balsa
- 2 $\frac{1}{4} \times \frac{1}{4} \times 24$ -inch balsa squares
- 1 package LEDs in varied shapes and colors
- Electrical wire
- Battery holder



The walls of the tire rack/driver's stand. Recessing the corner posts $\frac{1}{4}$ inch will create an overhang when mounted to the trailer frame.

LOW-DOLLAR CUSTOM TRAILER:

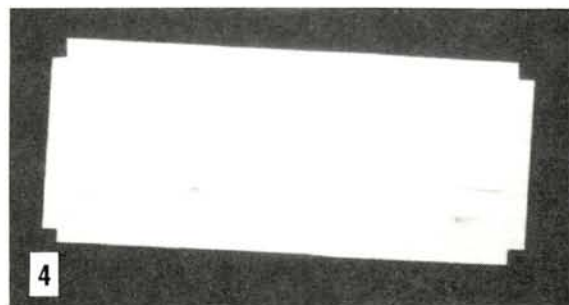
Zap everything into place and secure with wood screws to increase strength.

Tire rack/driver's stand: Now that we have a rolling chassis, we finish it by adding a tire rack/drivers' stand. Cut the 4-inch-wide sheet to the width of the front of the trailer. Next, cut two additional pieces into 3-inch widths to be used as side walls. You can make these pieces longer or shorter, depending on the size of box you want to construct.

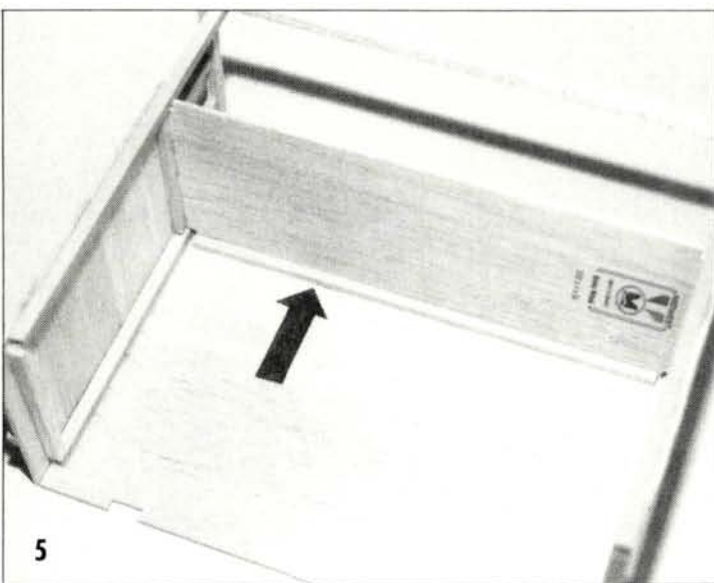
Next, cut the 1/4-inch square balsa/plas-

below the top edge. These will act as supports for the platform. Notch the corners of the platform so that it will fit around the vertical supports, and put it into place. Again, check for fit and Zap it into place. Add a rail and a ladder, and the tire rack/drivers' stand is now complete.

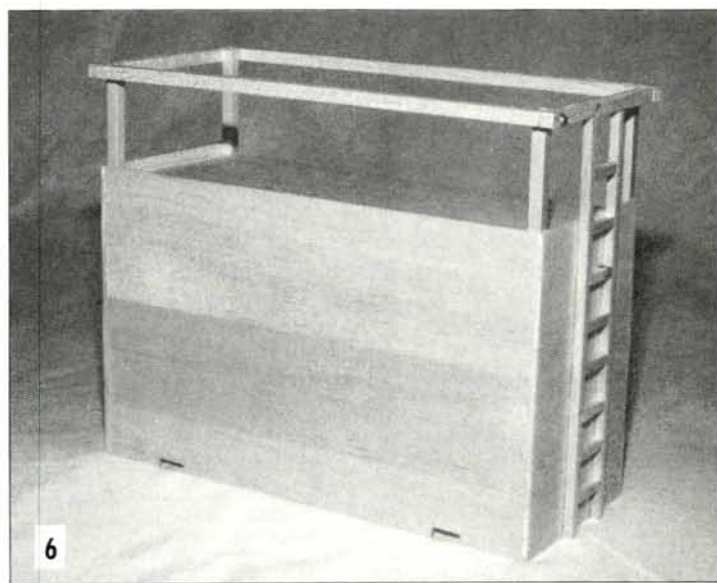
You could also consider adding a door to one of the side walls. Simply draw and cut around a



Note the corners of the platform; they'll fit around the corner posts.



To support the platform, apply balsa strips for additional strength.

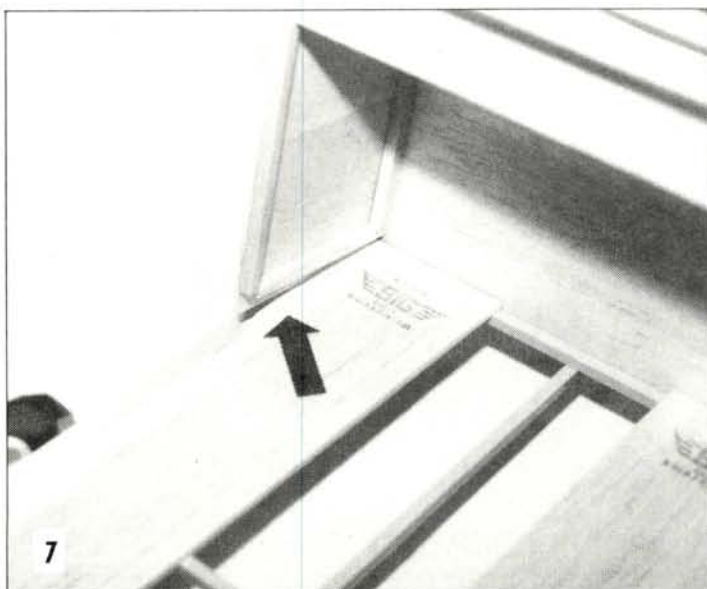


For a scale look, complete the tire rack with a ladder and rails made of balsa strips.

tic posts into four 6-inch lengths. With the front wall lying flat on a smooth surface, Zap a set of supports flush to the outside edge and 1/4 inch up from the bottom edge. This will create a lip that will add support and improve the appearance of the box when it's mounted to the frame. Add the side walls one at a time, allowing sufficient time for the cement to set.

Put the box upright and add the two remaining supports to the back edges of the side walls. (Don't forget to raise them 1/4 inch before securing them.) By now, if all has gone well, the box should overlap the frame and rest on the four corner posts. When you've checked the fit, lift the box off the trailer and set it aside.

Now cut out a piece of balsa sheet the same size as the top of the box; this will be used as a platform. Secure scrap 1/4-inch strips (cut to the required length) around the inside edge of the box, 1/2 inch



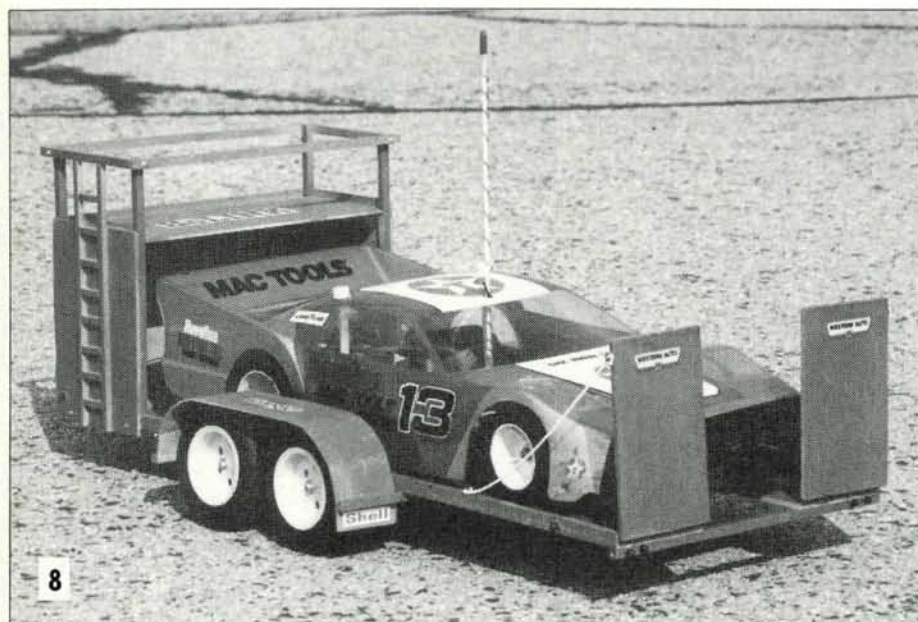
The corner posts will act as supports when the tire rack is put over the frame. The arrow points to the overhang made by the structure's recessed frame.

door outline with a sharp razor knife; then re-attach one edge of the cut-out piece with nylon airplane hinges.

Running lights:

What better way to complete this project than by adding running lights? Buy some light-emitting diodes (LEDs) at your local electronics store. They come in a variety of shapes and colors and can be bought in quantity for just a few dollars. When you have as many as you need, solder 3 inches of

LOW-DOLLAR CUSTOM TRAILER:



The result of your efforts! Paint it to match your vehicle. Note the running lights!

wire to each LED lead. Drill appropriate holes for the wires in the frame or box, and feed the wires through; then pull them through, leaving the LED exposed so that

it can be seen clearly.

Since LEDs only work in one current-flow direction, you'll have to test each unit to find its positive side. Generally

speaking, the positive side is the one with the longer lead, but, just to be sure, take a 9V battery and connect to each unit, reversing (+) and (-) until the LED glows. You'll soon get the idea when you try it. Mark each positive or negative side of the leads so that they can be wired in parallel.

Next, attach a 9V transistor battery connector, or a similar power source (that old, unused, receiver battery box will do nicely here), inside the tire rack/drivers' stand. With all the rough wiring completed (don't shorten, solder, or heat-shrink the connections yet), you only have to plug in the battery. When you're satisfied that everything is in order, disconnect the battery and finalize the wire routing and connections. Add an in-line switch and attach it to the undercarriage so that it's out of sight.

Well, there you have it. With matching paint and markings, you can proudly display your latest set of wheels on your own customized trailer. ■

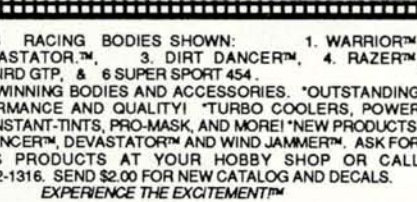
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I SURVIVED...

(Continued from page 82)

car ran without a problem.

I took another practice run to see if I could get four minutes out of the motor and gear combo. If I could make time with the lesser pack, I'd have no problems in the heats. The 10L made the time, but felt a little "squirrely"; it never spun out, but seemed unstable down the straights.

After the run, I sought the advice of Kent Clausen of Associated/Reedy (he's also a partner in LAVco), and he suggested that I put some silicone lube between the dampener plates on the rear suspension. Jan Limpach (a world slot-car champion who was on hand to help his good friend Bud Bartos) looked the car over and said the wing could be a little higher for more rear downforce. He also suggested that I lower the front of the body, which might have been allowing too much air to get into the car, thus causing the instability.

To make sure my gear selection would last, I made a final practice run using a new pack. I was given a pair of CKW radial tires to try. These rubber-capped foam tires had a very stiff rim, which didn't allow any flexing. Unlike most of

(Continued on page 110)

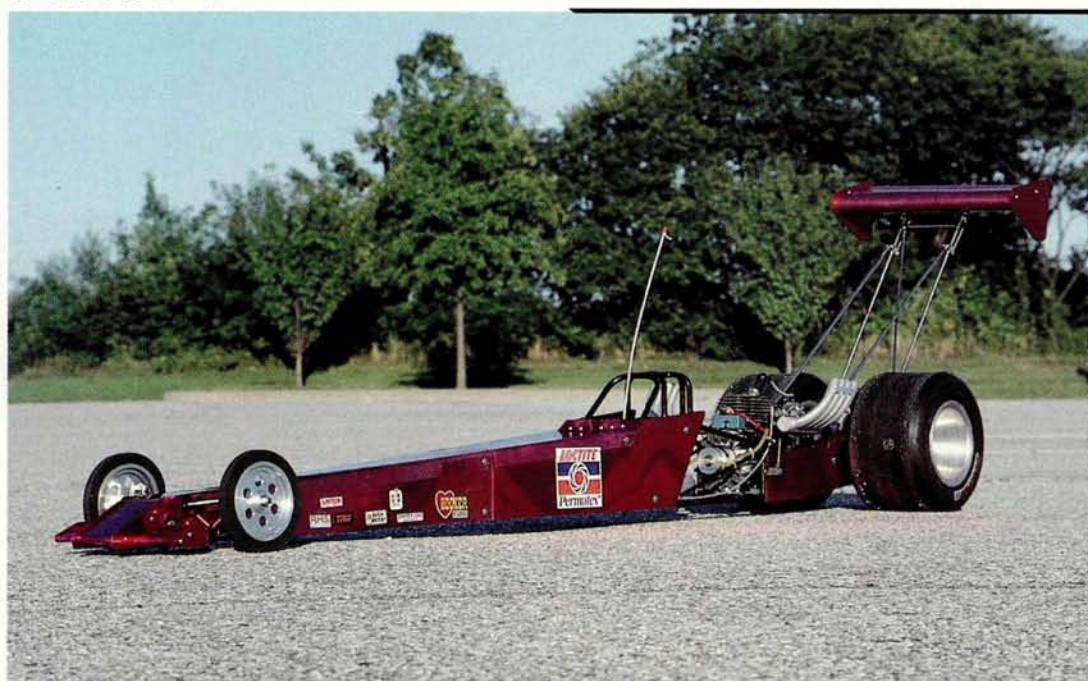
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TECNACRAFT



RAGIN' RED RAIL by STEVE POND

FOR NEWCOMERS TO the world of R/C car racing, drag racing probably seems relatively new—dating, in fact, from the recent introduction of dragsters. Powered by gas or electricity, these unusually fast cars have become more popular as R/C systems have become reliable enough to use in them. In fact, drag racing was quite popular in the past, primarily with 1/8-scale gas-powered cars; ROAR even set up rules for it, but participation was limited, because there were few available kits.

The surge in popularity of R/C car racing in general has given drag racing a renewed boost and led to the release of drag-related kits in every shape and scale. The 1/4-scale MK Engineering* Fueller is part of this enthusiasm, and, at more than 7 feet long, it's undoubtedly the big daddy of them all. It's as close as you can get to the "real thing" without having to strap yourself in.



The heart of the MK Fueller is the monster 54cc Solo engine, which provides plenty of horsepower for some hair-raising runs. The zoomie header and flywheel pulley are optional.

2 STROKE?

I'M A DRAG-RACING fanatic. From the time I learned about the horsepower potential of engines, I've wanted to crawl inside a dragster to experience the rush of eating up the quarter-mile with 10 pounds of burnt rubber at my back, at speeds almost twice as fast as a 747 on takeoff. Well, for me, just as for thousands of other drag-racing enthusiasts who don't have the resources to build and run one of these megabuck machines, R/C racing has served as an inexpensive stopgap.

Electric R/C drag racing is rather popular among the drag-racing community, but for the fanatic, there's nothing like the realism of the gas-powered 1/4-scale dragster. Most R/Cers are familiar with the electric motor and how it works, but

THE KIT: The MK Fueler has a list of features which, if you weren't paying attention, you might mistake for the list of ingredients for a full-scale fueler. The completely tubular, steel, two-piece chassis is made of 4130 chrome/moly, which is more resistant to bending than the mild steel with which some 1/4-scale cars are made.

The Fueler has a pair of solid-aluminum, front wheels, and these serve as a mount for the dense, foam-rubber tires. In the rear, two-piece aluminum wheels are saddled by a couple of tires made of dense foam rubber (pneumatic rubber tires).

The drive train starts with the ultra-powerful Solo 54cc engine, which is piston-ported and has magneto ignition. Connected to its crankshaft is a two-stage centrifugal clutch that rides inside a machined-aluminum bell housing. This clutch engages a steel clutch bell that's connected to the drive shaft to transfer the power to the rear end. The rear end has a precision-machined aluminum housing that contains tempered-steel gears. These are of the worm-gear variety and have a 6:1 overall ratio. The power is transmitted to the rear wheels by way of a solid steel axle. At each end of the axle is a double disc-brake assembly, which stops this beast at the end of each run. Finally, to trim the Fueler, there's a beautiful eight-

piece aluminum body with scale front and rear wings.

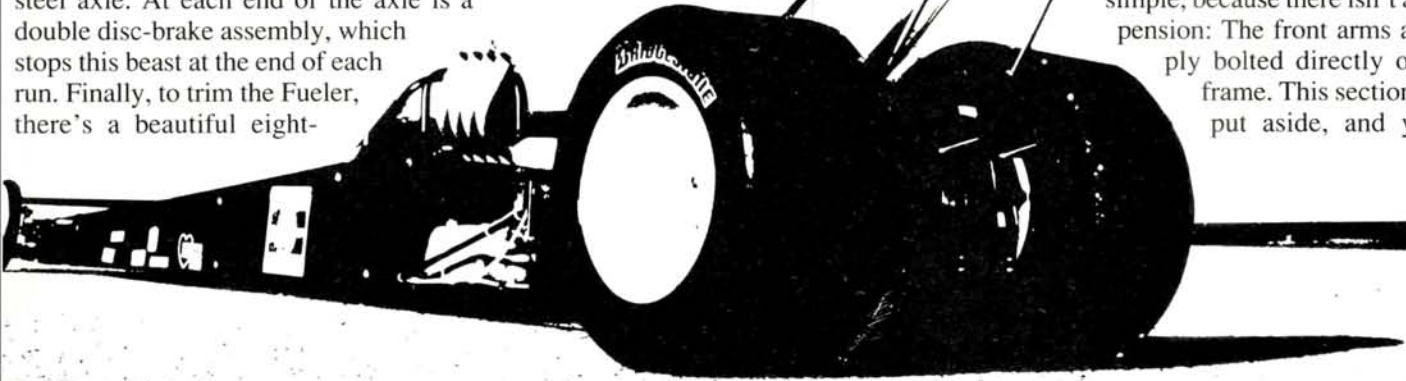
To assemble the Fueler, you'll need a few tools that are usually used for 1/10-scale cars and a few of those used for full-scale cars. The smaller tools are required primarily for the linkages and radio hardware, and the larger tools are for the rest of the assembly. There's a set of Allen wrenches, with which you can "cinch down" the Allen-head fasteners, but you must provide tools like a 1/4-inch socket set, an assortment of flat-head and Phillips-head screwdrivers, and a high-temp soldering iron with silver and lead solder. A small puller for removing the flywheel would also be helpful, but it isn't necessary.

Although not required for assembly, you'll need some other accessories if you want to run the car. The kit doesn't include an exhaust header or the starter pulley that engages the belt from the remote starter. These accessories are available through MK Engineering and are vital, unless you prefer to experiment with your own exhaust and starting system.

As you might have guessed, this is no Kyosho or Tamiya kit, and it's no walk in the park to build. It doesn't include the kind of instructions that you can breeze through just by looking at the pictures. You must *read* the instructions thoroughly and, in some cases, read *between* the lines to produce a race-ready finished product. It's an understatement to say that

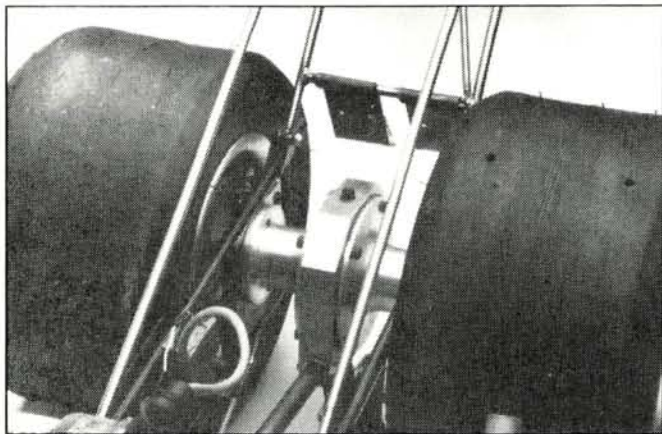
those who attempt this project should have prior experience with R/C cars, or at least be mechanically inclined.

ASSEMBLY: Start by attaching the front suspension and steering components to the front section of the frame. This portion of the construction is very simple, because there isn't any suspension: The front arms are simply bolted directly onto the frame. This section is then put aside, and you as-



when asked how these gas-powered things work, many draw a blank. The engine included with the MK Fueler is a 54cc 2-stroke that features a piston-ported intake system and magneto ignition. What's a 2-stroke? Two-stroke engines obviously have only two strokes per cycle. Each cycle consists of an intake, compression, combustion and exhaust stroke. In a 2-stroke engine, the compression and intake happen simultaneously as the piston travels toward the top of the cylinder, and the combustion and exhaust take place as the piston is on its way back down. The entire sequence goes something like this: When the piston is on its way up, it creates a vacuum in the crankcase, and this vacuum draws the fuel mixture into the crankcase. Meanwhile, the fuel that's already in the combustion chamber is being compressed by the piston. When the piston gets to the top of the cylinder, the spark plug

fires, and this ignites the fuel. This combustion forces the piston back down to the bottom of the cylinder, where there's an exhaust port through which the burnt fuel exits. While the piston is on its way down, however, the fuel that was drawn in during the up-stroke is forced out of the crankcase. Where does it go from there? Two-stroke engines have transfer ports that run up the sides of the cylinder wall. There's an opening in the crankcase for the bottom of the port, and an opening in the cylinder above the piston. After the spark plug has fired and forced the piston down, the fuel that's in the crankcase is forced through the transfer ports and up into the cylinder. At the same time, the burnt fuel leaves through the exhaust. This completes the combustion cycle in just two strokes: one time to the top and one time back down; hence the name "2-stroke engine"!



The rear end of the MK Fueler, shown here sandwiched between the mammoth rear tires, features a heavy-duty, machined-aluminum housing and tempered steel gears for getting the power to the ground.

semble the rear of the car. The instructions tell you to bolt the front and rear portions of the frame together after the front portion has been completed. If you don't have a workbench large enough for this 7-footer, however, don't connect the two halves until it's time to install the steering linkage.

To assemble the rear of the car, start by installing the rear end in the chassis. The rear end is held to the frame with six cap-screws, but they're left loose so that you can align the rear with the engine and the drive shaft later. When you attach the engine, a puller (an automotive steering-wheel puller would do the job) will come in handy. To attach the engine to the chassis, you must first attach a pair of mounting plates to the engine. The rear plate is simply bolted to the engine block behind the clutch-bell housing, but the front plate must be attached to the block behind the flywheel, which is already installed. To attach this plate, the flywheel must first be removed.

As previously mentioned, you don't have to get the flywheel off with a puller. By tapping each side of the flywheel with a rubber hammer, it will eventually come loose. With both engine-mounting plates in place, the engine is put into the chassis. Fasten the

drive shaft to both the engine and the rear end, and then, by shifting the two around, align the shaft to prevent any binding.

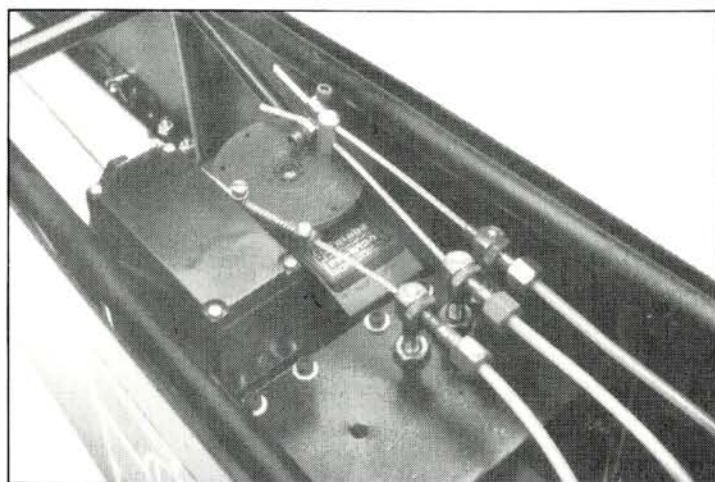
wires must be secured to the chassis with some cable ties to prevent them from tangling in the fly-wheel.

This version of the MK Fueler kit included pneumatic rubber tires. When you use these tires, drill the rims for a valve stem, or "breather hole." The valve stem allows you to inflate the tires, but it also prevents them from "growing" toward the end of runs. With a simple breather hole, the tires can support the weight of the car when stationary, and they can in-

When the engine is in place, the coil for the ignition and the kill switch are mounted on the chassis. Because the mounting tabs on the chassis for these items are too far away for the wires to reach, the wires must be cut and longer sections soldered in. This is a simple operation, but the

extremely well. With the tires complete and attached to the car, you only have to install the radio and linkages.

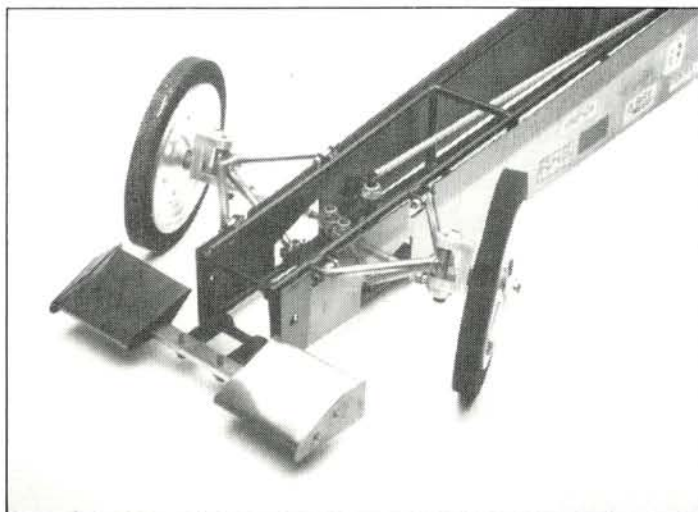
Before installing the linkages, the halves of the chassis are joined, and the radio system is installed. I used the Futaba* Magnum PCM, which should prevent a car of this size and weight from going out of control. I replaced the S132s servos that came with the system with Futaba's monster S134 servos, which are extremely strong and, I think, necessary to guide this fast, heavy, car. Linkage in-



Futaba's monster S134 servos handle the steering, throttle and braking functions. The two cables connected to the right side of the upright servo are connected to the disc brakes on either side of the rear end.

stallation takes some time, because none of the linkages is pre-assembled. Apart from the steering linkage, the linkage is the cable type, which must be fit to the chassis and cut to length. No specific measurements are given in the instructions, because the lengths will vary, depending on how the cables are routed.

When the cables are in place, they must be attached to the servos and cut to length on their other ends, and this is where the silver solder is used. Solder the threaded ends onto the cut ends of the cable. Standard lead solder wouldn't be strong enough, so silver solder must be used. Regular silver solder can only be melted with a torch, but Sta-Brite silver solder can be melted with a soldering iron or a small torch. Because the iron must be very hot to melt the solder, I used the Ungar* 300 Race Station, which has adjustable temperature controls (very helpful for a variety of applications) and reaches the very high temperatures needed to melt the



The simple design of the Fueler's front end allows quick assembly. Note the heavy caster angle that keeps the car going straight at high speeds.

crease in diameter at the top end. To join the foam tires to the aluminum front wheels, 3M weather-strip adhesive works

ta-Brite.

To allow the linkages to work as efficiently as possible, the housings into which the cables slide should be secured to the chassis. This will allow maximum throw on the brake and throttle linkages. With the cables soldered and in place, all that stands between you and the quarter-mile is finishing and attaching the body.

The aluminum body pieces can be anodized one of many colors, and, after a little preparation, they can also be painted. I had the body anodized red, and I finished it in almost no time with some Parma* and Autographics* 1/4-scale decals. I attached the body with the 1/4 Dzus fasteners, then it was time to be off to the track for some pavement pounding.

PERFORMANCE: After getting the trim settings out of the way, Mike Kopchick and Mike Welsh of MK Engineering helped me to fuel-up and start the car. To start the MK Fueler, I used the remote starter that's based on a Toyota car starter! These have been modified by MK Engineering so that they can be used with the dragsters, but they're rather costly. If you can borrow one, as I did, you'll avoid this expense.

When the car is started, you have to set the mixture screws to allow the engines to produce maximum horsepower. The screws are preset at the factory, and they should allow you to start the car, but fine-tuning is required from there. Unlike the carbs on the popular Zenoah engines that require disassembly to change the mixture jets, on the Solo engine, the carb mixture can be set simply by turning a screw. With the fine adjustments completed after a couple of dry runs, the car was ready for heads-up run.

I took the Fueler to a very large parking lot in Long Island, NY, where races are held regularly. For safety, the track was shortened to 220 feet (a 1/16-scale quarter-mile). The lot was large enough to run 330 feet (a 1/4-scale quarter-mile), but that would have shortened the shutdown stretch and increased the chances of cars hitting stationary objects. Believe me, missing a curb with one of these cars isn't enjoyable!

Qualifying was the first task, but it only required that each driver make a clean, reasonably fast pass. I managed to do that

and, after bringing the Fueler back to make a few carb adjustments, it was ready to run. I only had to get past one car in the eliminations to make it to the final round, but these were experienced drivers. Fortunately for me, my opponent's car didn't get off the line as fast as mine did, and this gave me the win, with a pretty good ET.

This was really impressive for the car's first track runs, and I give credit to the car rather than to my driving. In the finals, I was up against the car's designer and manufacturer, Mike Kopchick. What an accomplishment it would be to win against him! I'll save you any suspense, however, by telling you now that he really beat me. My car wasn't properly jetted and couldn't get off the line fast enough to catch him (sounds like another of those racer's excuses, huh?). I was still able to bring home 2nd place, and my fast time of the day was only fractions off the day's fastest time.

On a full 330-foot track, the car can turn times in the high 4-second range at over 65mph, and this rivals the acceleration of the world's fastest production cars. The Fueler isn't slow, by any means, and it's competitive right out of the box!

Although building the car probably increased my blood pressure (partly owing to the poor instructions), much of my pain vanished when the car hit the track. I rectified assembly problems by calling the helpful people at MK Engineering. They assure me that they'll help anyone who has questions about building an MK car.

If going fast is your gig and you want to run one of the raddest ride drag racing has to offer, the MK 1/4-scale Fueler is the way to go. The car could give you chest pains during its assembly, but the miracle cure comes when you run it. It's a blast!

**Here are the addresses of the companies mentioned in this article:*

MK Engineering, 60-U Corbin Ave., Bay Shore, NY 11706.

Futaba Corp. of America, 4 Studebaker, Irvine, CA 92718.

Ungar, distributed by Horizon Hobby Distributors, 3102 Clark Rd., P.O. Box 6029, Champaign, IL 61821.

Parma International, Inc., 13927 Progress Pkwy., North Royalton, OH 44133.

Autographics of California, 7401 White Lane, #1, Bakersfield, CA 93309. ■

MK ENGINEERING

MK FUELER

Type Top Fuel Dragster
Scale 1/4
Sug. Retail Price \$1595

DIMENSIONS:

Overall Length 87 inches
Width 16.5 inches
Height (at top of wing) 24 inches
Wheelbase 64 inches
Front Track 9.25 inches
Rear Track 10.6 inches

WEIGHT 33.5 pounds

BODY:

Type Dragster
Material Aluminum

CHASSIS:

Type Tube frame
Material Tubular 4130 chrome/moly steel

DRIVE TRAIN:

Primary 2-stage centrifugal clutch
Axle 6-to-1 worm-gear solid axle
Differential None
Bearings Ball bearings

SUSPENSION None

WHEELS:

Front: Type One-piece aluminum
Dimensions (DxW) 5x.5 inches
Rear: Type Two-piece aluminum
Dimensions (DxW) 5x5.25 inches

TIRES:

Front Dense foam
Rear Pneumatic rubber

ENGINE:

Type Solo 2-stroke
Displacement 54cc
Starter Remote

OPTIONS AS TESTED:

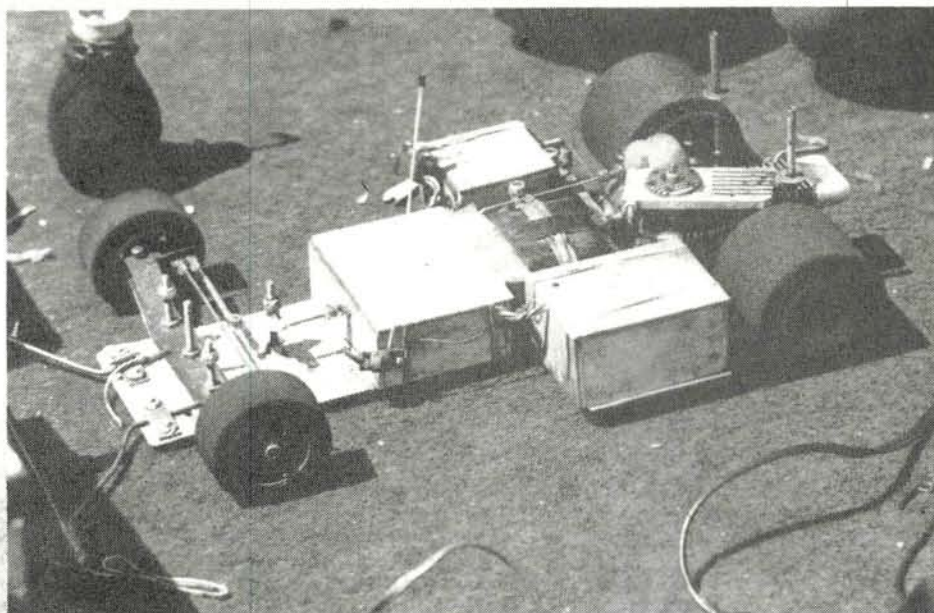
Starter, flywheel starting pulley, and zoomie exhaust header.

COMMENTS:

Right from the box, the MK Fueler is competitive with other cars in its class and allows you to jump into the thick of the competition without having to spend any extra cash. Owing to the poor set of instructions, it's pretty difficult to build, but a couple of phone calls straightened out the problems I had. It could be too much for an inexperienced modeler to handle, so be sure this is what you want before you buy.

Right: The typical Associated RC1 was one of the hot cars to run in the early '70s. Note the large boxes that protected the fragile radio gear.

Below: Larry Davidson, a writer for *Model Airplane News* in 1971, is shown here during a review of the Associated RC1. Those who were racing during this time should recognize the Orbit Cobra Digital radio system.



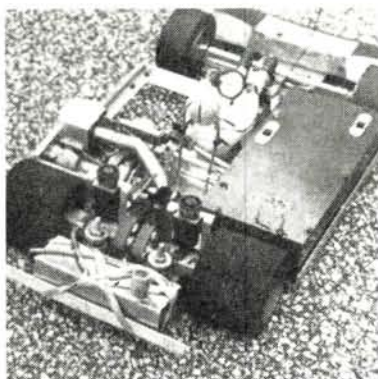
ROOTS of **R/C** TIME TRAVEL

THIS IS THE FIRST of two articles about the development of R/C race cars. I hope to give those who are new to this dynamic hobby a proper perspective on the early stages of R/C car racing and to show how far the hobby has come in a relatively short time.

In the letters we receive, and at racers' trackside discussions, I often hear expressions of disappointment about a particular item: the electronic speed control that blew, the diff that let go, the "dud" stock motor and many other failures that are common in R/C car racing. While these problems are certainly disappointing, the sound of people voicing complaints would soon become a roar if a time machine whisked away today's high-tech equipment and replaced it with some of the early R/C race cars. Everyone would quickly have a clear per-

spective on what early R/C car racing was like, and they'd have a renewed appreciation of the capabilities of today's cars. The sport has made extraordinary progress—and fast!

In a limited way, R/C car racing dates back to just before the mid-'60s. In the early- to mid-'60s, slot-car racing was the rage among auto buffs, and the absence of reliable radio equipment confined these cars to running along a slot. Far from full-scale racing, a handful of crazed auto-racing enthusiasts who had a yearning for the "real thing" headed to the machine shops to build R/C cars that could use the equipment already available for R/C



Gary Walker's scratch-built 1/8-scale car had a number of amazing features, including metered air suspension and individual belt drive for both rear wheels.

model airplanes. This added another dimension (and then some!) to slot-car racing.

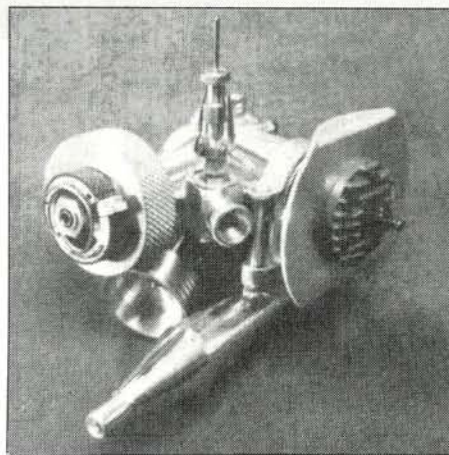
At about the same time, a group of avid airplane modelers set out to create an R/C race car

by STEVE POND

that would emulate the full-scale racers of the time. There were some small R/C car kits, but these were simply model cars that could move, and they weren't racers.

The car pioneers made what we now know as 1/8-scale pan cars. For the most part, the cars used .19-cubic-inch 2-stroke model airplane engines. Depending on their builders, they were as complicated as the full-scale cars with intricate four-wheel independent suspension and transmissions, or as simple as an aluminum-plate chassis with only the bare essentials for getting around the track. Whatever their configuration, these were the foundation of R/C car racing as we know it.

It wasn't until about 1967 that kits of these types of R/C cars became available. Companies like WEN, MCE, Dynamic and Associated (some of these were successful slot-car manufacturers) jumped on the R/C bandwagon by introducing their own R/C racing machines. Heath Kit, which is the company that provided us with the home and classroom experiments of our childhood, was also in it right from the start with its 1/8-scale kit. These new kits really opened the doors to the hobby, and



Left: Powering this 1968 Ra/Car is a K&B .19 R/C engine with a special cooling fin, a Tatone's "Peace Pipe" muffler and a Ra/Car flywheel and clutch.

Right: The Ra/Car Indy car kit was one of the sharper-looking Indy-style kits of the time. Note the rubber tires and scale, 5-spoke wheels.



the number of racers reached a point at which they could actually get together and race their machines competitively.

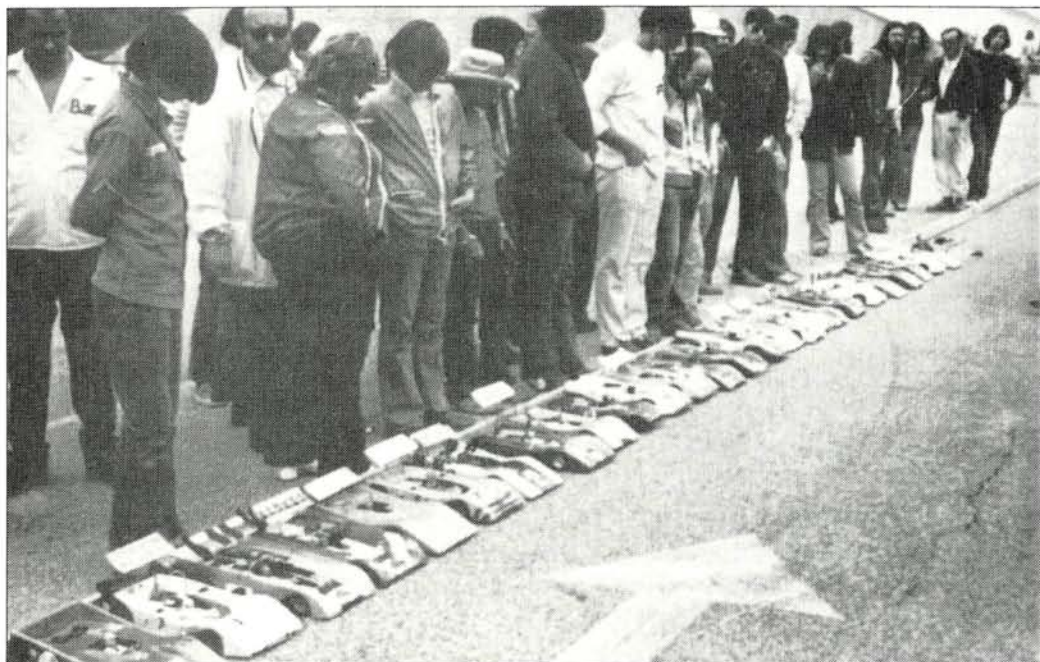
By today's standards, these early R/C cars were very crude and difficult to control. They had full suspension and functional transmissions, and this might sound good, but the increased weight far outweighed any improvements in performance. In the late '60s, many went over to the pan

design and used a simple clutch pinion and spur assembly to transmit the power to the ground. Only when manufacturing technology was improved did these cars revert to the suspension and two-speed transmission design.

In the early '70s, Associated (now Associated Electrics) introduced the Mike Morrissey-designed RC1, and it turned the whole racing fraternity on its head. Relying on a crude, aluminum, pan design, the

RC1 was considerably faster and more predictable than its competitors. Associated had figured out that you could race on dense foam tires and that they offered more traction than the hard rubber tires that were then in use.

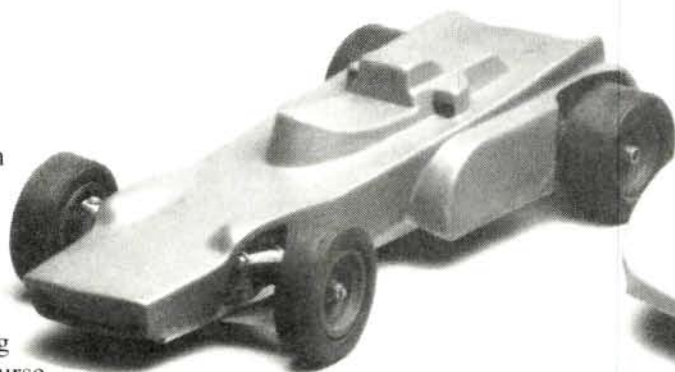
The RC1 was competitive against cars like the Marker Machine, which made use of very intricate suspension and transmission designs. While the Marker held off the RC1 during the ROAR Nationals in 1970, with



Chris Chan in the driver's seat, the the RCI was victorious at the '71 Nats during the roadcourse

competition (yes, there was also 1/8-scale oval racing at that time). From this point on, cars' designs eventually reverted to independent suspensions and two-speed transmissions, but these were much less complicated than those on earlier cars. Later, we saw the development of 4WD, which dominates 1/8-scale racing today.

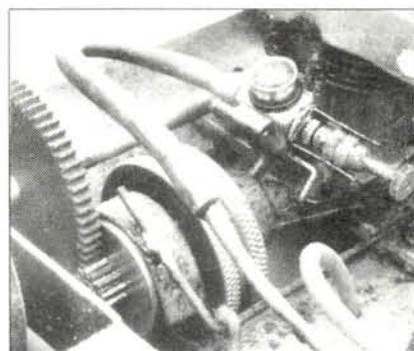
During the early days, the R/C sys-



Above: From the mid to late 60's two of the earliest competition R/C cars include the WEN Indy-style car, left, and the Heathkit Spectre, right.

tems used to guide the cars were as important as the cars themselves. Today, we tend to take the reliability of radios for granted, but early systems were very fragile and caused more problems than the cars. The first R/C cars were guided by reed and escape-ment systems that were as crude as could be. Not only was the gear so cumbersome that it was hard to find a place to fit it, but the way the systems functioned would also lead to almost certain disaster.

The introduction of proportional R/C helped put car racing on the map, but it wasn't the blessing that it was made out to be. Right through the early '70s, proportional radio systems were borrowed from model airplanes and usually had to be adapted for use in cars. The equipment was so fragile that it could be knocked out of com-



This was the typical drive system of the Heathkit Spectre car, which was one of the first. This car was powered by a VECO .19 2-stroke engine.

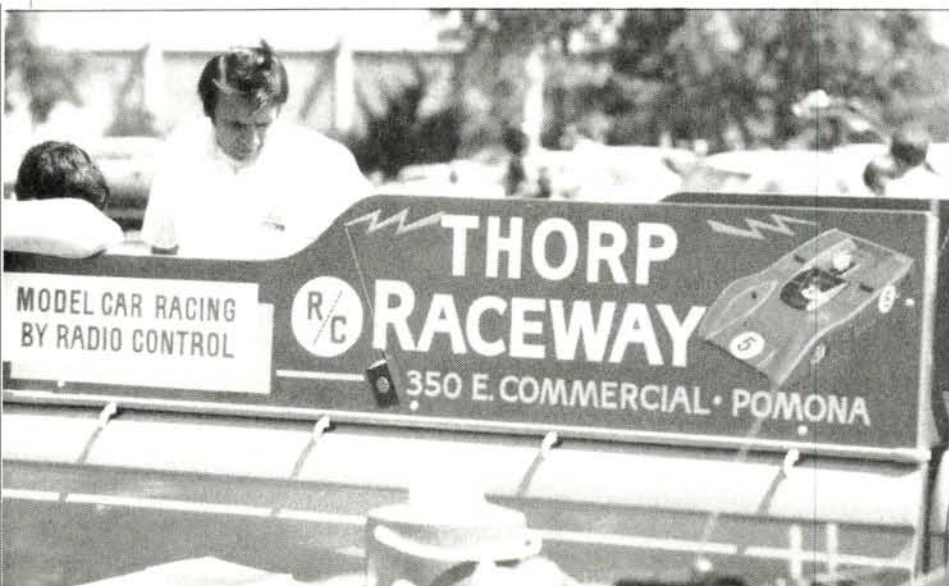
mission by the vibration of the running engine, or even just by starting the car.

The most common radios were Orbit and Citizen, and because these were originally designed for airplanes, they had more channels than we needed and, of course, had a very high price tag. Radio systems sold for about \$250 to \$300, which, by today's prices, would be about \$600 to \$700! Needless to say, the radios were carefully protected! It wasn't until the early '70s, when radios specifically for R/C cars were introduced, that you could depend on them to get you through a day's hard racing.

Despite the problems facing racing enthusiasts, the sport thrived well into the mid-'70s, when a new type of car changed the face of model car racing forever. Those who raced 1/8-scale gas-powered cars considered the newcomers to be toy-like. What were these "toys"?—1/10-scale electric cars. Stay tuned! ■



Ralph Burch Jr. (left), who recently won the Superspeedway race at the Thunderdrome Raceway in Encino, CA, is pictured here during a race in 1982.



Thorp Raceway, in Pomona, CA, was one of the most popular tracks to run 1/8-scale gas cars. The track still exists as the Ranch Pit Shop.

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I SURVIVED...

(Continued from page 96)

the other radials, they came already scuffed-in and were immediately ready to go. Because they were slightly larger in diameter than the ones I had been running, I went down one tooth on the pinion to make up for the slight loss of bottom end.

With 15-year-old Ricky Jordan (the son

of Bolink's Rick Jordan) holding the stopwatch, I went out to make a good run, so that I'd feel relatively confident going into Friday's qualifying. Ricky is a great R/C racer with lightning-fast reflexes. Younger racers identify with and admire him, and he was a great help to me: putting my car on the track before the races; timing my laps; and offering encouragement. Many older racers could learn from

him.

As with the other radials, my tires were quite squirrely when I first applied the gas, but by taking it easy, I made it into the first turn, headed in the right direction. The battery lasted for more than four minutes, and Ricky commented that my lap times were consistent. I decided, however, to leave the gearing the same for

(Continued on page 114)

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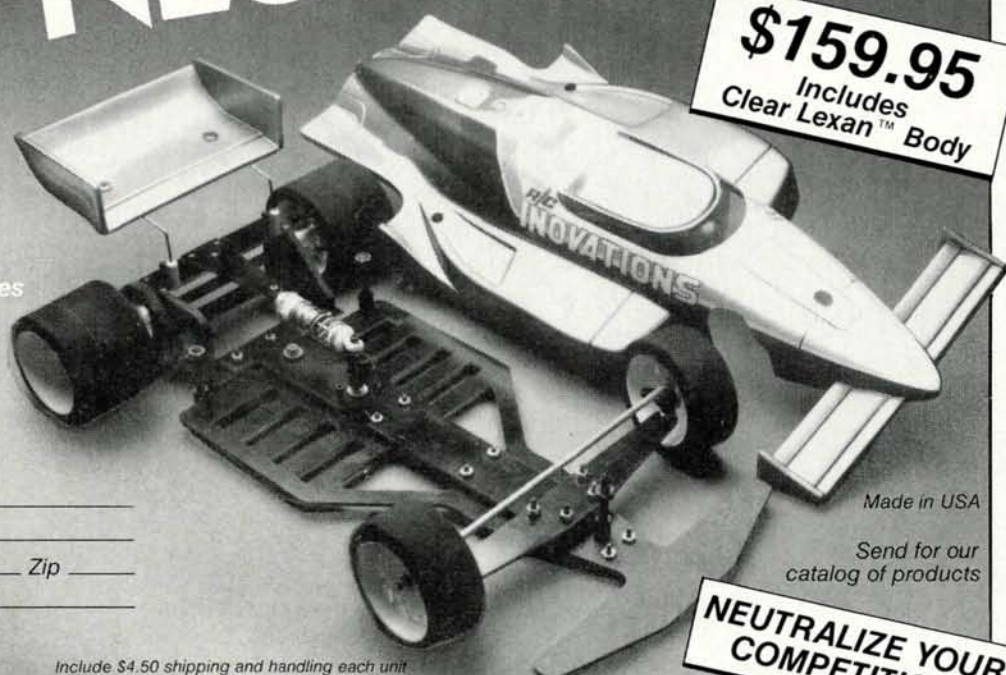
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I SURVIVED...

(Continued from page 110)

the next day, since I didn't know what traffic would be like with 10 cars on the track.

Eyeing the Experts

After practicing, I watched other drivers to see if I'd learn anything. The fastest guys were staying very low, between the black line that marked the bottom border of the track and a line that was about 3 feet up the bank. The fastest ones, like Kent Claussen, Ralph Burch Jr., and Bud Bartos, were able to keep their cars glued to that lower black line. Everyone tried to avoid a couple of rough areas, and those who *didn't* saw their cars flip over backward, so that was obviously something to keep in mind.

On Thursday night, Rich and I stopped off at a local Radio Shack to check a few things out. I wanted some 30-ohm, 10-watt discharge resistors (I had left mine at home), and—more important—I wanted to find a charger that I had heard about.

Present battery charging philosophy leans toward a "soft-pulse" charge, which is supposed to be easier on the delicate

(Continued on page 118)

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I SURVIVED...

(Continued from page 114)

SCE cells needed for modified motors. Rick Jordan, who works and races for Bolink, had told me about a Radio Shack charger that was on sale for \$24.95. This charger is designed to charge 7.2V, 6-cell packs for Radio Shack's own line of R/C cars, and Rick had been told that it has such a soft pulse that it's almost a constant-current, or linear, charger. A charger with a constant current is supposed to be able to charge an SCE without the necessity of letting the pack sit overnight. I decided to give it a try, to see what this little—and cheap—baby could do.

Back to the hotel to collapse, but not before working on our cars!

Don't Destroy or Damage!

Cover your work area with a towel brought from home. Hotel managers don't look kindly on scratched or burnt furniture. If we're destructive, we won't be able to get group rates, so remember that the next time you decide to solder some wire right on the table. Don't think that the maids won't miss "just one little towel," because they will, and you'll be billed for it. And they don't like to see

(Continued on page 120)

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I SURVIVED...

(Continued from page 118)

grease smears, burn marks or tire-traction fluid on them, either.

Hint #8: Don't damage anything in your hotel room.

There wasn't much to do on my car. I took out the motor, cleaned the brushes

and comm, sprayed it with Dan's Motor Spray and re-oiled the bearings. I cleaned the car with a soft brush, and I cleaned and oiled the axle bearings.

I also checked out my new charger. I opened the case and found a potentiometer that controlled the charge current. This charger isn't designed for adjustable cur-

rent, but Rick Jordan told me that the pot, which is right in front of the heat sink inside the charger, controls the current. I simply hooked up the charger to a power supply that had an ammeter and started to charge a battery. I turned the pot with a small screwdriver until the meter read "3

(Continued on page 134)

PARMA DOMINATES

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Parma dominates the ROAR Region 3 Off Road Championships. In the 4 Wheel Drive Modified class, drivers Andy Dobson, Jeff O'Malley and Daryl Bingner finished in first, second and seventh place respectively. All three were using the new Parma "Cyclone II" Modified motors with C winds, Parma Super Matched Sanyos, Parma Tires, and other accessories. The Cyclone II Modified Motors are available in a wide winds, for all forms of racing. See these awesome new motors at your hobby shop after November 15.

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Jeff O'Malley

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7TH PLACE

Daryl Bingner

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SPRINT CAR CONVERSION



RCRC GIVES KYOSHO'S 2WD THE DIRT-OVAL TREATMENT.

by JIM SHEPKA

IT ISN'T SURPRISING that Cliff Fisher at RCRC* really knows sprint cars—after all, he's just around the corner from Ascot Speedway, which is one of the country's premier sprint-car tracks. When Cliff decided to build a sprint-car conversion kit, he naturally went next door to see the guys with the real things. To no one's surprise, RCRC now markets a 1/10-scale Challenger version that will convert your Ultima, RC10, or JR-X2 into one of the meanest-looking sprinters you'll find anywhere.

THE KIT: I'll review the basic kit for the Ultima. It consists of a fiberglass chassis plate, a front-end angle bracket, an aluminum roll cage, two side nerf bars, a rear nerf bar, a receiver mount, Lexan side panels with headers, and assorted nuts and bolts. Since this is an Official Commemorative Signature Edition, each kit also contains a numbered gold-colored plate that's signed by Cary Agajanian, the President of Ascot Speedway.

THE CONVERSION: As soon as I saw the kit, I thought it would be a snap to build. I suppose I could have just snapped A into B, tightened up C, painted D and gone off to the races, but, being a *show-*

before-go kind of guy, I approached this project a little differently.

The basic aluminum cage's satin finish was pitted (probably as a result of sand blasting), and I had to sand it smooth before polishing it. Using number 1500 fine-grit sandpaper and WD-40

WHEN KYOSHO introduced the Ultima, the company intended it to be a strong contender against Associated's RC10 for the position of premier off-road racer. The Ultima was competitive, but it never quite reached the level of dominance attained by the RC10.

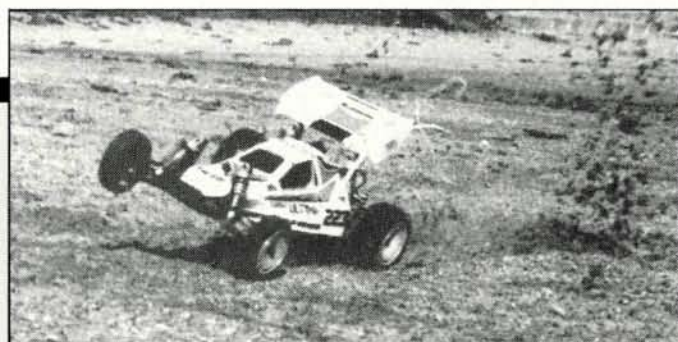
The original Ultima had a narrow aluminum chassis with a fiberglass upper plate; small, red, oil-filled, coil-over shocks; a three-speed forward, one-step reverse mechanical speed control; and a Mabuchi RS-540S motor. Ball bearings weren't included, but they were available as an option.

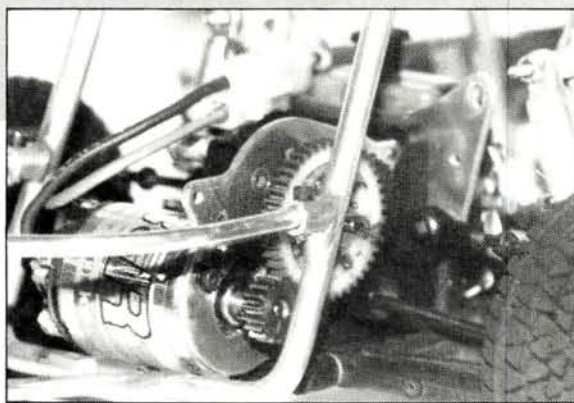
The second version of the car was the Turbo Ultima, which reflected the upgrades that brought Kyosho and Joel Johnson the 1987 IFMAR 2WD World Championship. The Turbo Ultima included such goodies as graphite shock towers and upper plate; platinum shocks; improved, rotary-type mechanical speed control; ball differential; ball bearings; anodized special-edition chassis; universal joints; LeMans 240ST motor; and new body.

Most reported that everything except the platinum shocks was an improvement, and many Turbo Ultima owners replaced the platinum shocks with Kyosho's own gold shocks, which seemed to work better.

In 1989, Kyosho unveiled the Ultima Pro. They pulled out all the stops to keep up with the new kids on the block: the Team Losi JR-X2 and the rejuvenated Associated RC10 Graphite. The new Ultima Pro had the additions of a single-plane graphite chassis with battery slots for saddle packs; adjustable tie rods; and gold shocks. It was lighter and longer than the Turbo, and this gave better handling. The Pro didn't come with a mechanical speed control or motor; serious racers could therefore make their own choices.

Kyosho has demonstrated a willingness to improve its products to keep up with the competition, and this attitude will ensure that the Ultima line will always be a force to be reckoned with.





The B&R stock motor and the Thorp overdrive unit produce excellent top end. The rear nerf bar provides excellent protection for the power train.

oil, I lightly sanded the entire cage, and after a couple of hours of careful work, the pit and burr marks had almost disappeared, and the cage was beginning to take shape. I had a relatively smooth surface to work with, but additional hand-rubbing was necessary to bring out the look that I was after. This turned out to be no easy task, as it took many hours of hand-buffing with a soft cloth and automotive chrome polish.

Two nights and a few blisters later, my efforts started to pay off; the aluminum cage really started to shine. Finally, to remove any excess film or residue, I went over the entire surface very lightly with cotton balls. The secrets to success here are *patience* and *time*. Of course, for only \$20 more, you could always order the deluxe kit that comes with a *chrome/moly* cage that's lighter and more rugged than the one in the standard kit, but why take the easy way when you can have so much fun working your fingers to the bone?

With the hard part completed, the rest of the transformation looked as though it would be a snap. The instruction sheet (if that's what you call it!) is pretty straightforward in its approach to the conversion: "*Assemble your Ultima as per your Ultima instructions. Substitute the fiberglass RCRC chassis plate for the aluminum chassis that comes in the stock Ultima kit.*" What could be easier? It's fortunate that the Ultima's simple design lends itself to this application, because apart from a picture of the final project, the instructions offered little assistance.

I began by removing the four screws that held the front bulkhead to the stock aluminum chassis, and I bolted the entire unit to the new chassis plate. With the increased weight of the roll cage, I thought that any reduction in weight at this stage would surely help in the long run, so I replaced the standard Kyosho* bolts with Associated's* aluminum 8-32 screws. I then repeated these steps for the rear bulkhead.

The instructions suggest that you use an As-

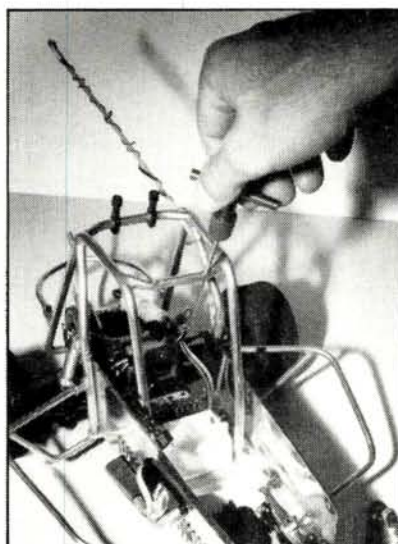
sociated-type bellcrank system instead of the stock Kyosho unit. I decided to go one step further and added a *Hough* bellcrank system up front. Since 8-32 screws were used to secure the front bracket to the chassis plate, this system could be bolted directly to these screws. I fitted the bearings and crank system over the screws and bolted them into place. All went well until I tried to move the unit back and forth: The crank arms were too long and they wedged against the front bulkhead—not the desired effect! Since this system obviously wouldn't work, I removed

the unit and replaced it with the recommended Associated unit. No offense to you RC10 fans, but this stock unit just wasn't going to cut it. It just looked fragile! I finally decided to adapt the stock Kyosho unit to the new chassis.

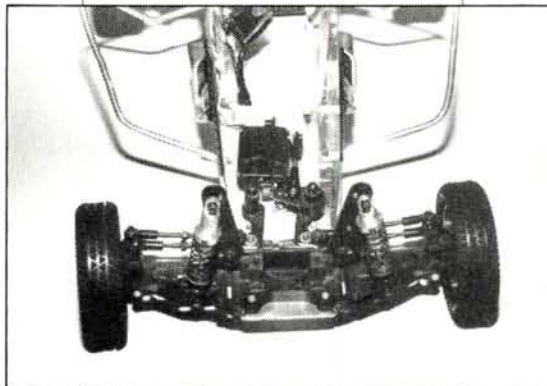
To align the holes for the two 1-inch bolts that had to be attached, I removed the stock unit and made a template based on the stock chassis. When this had been marked, I drilled a hole through the G-10 chassis and the aluminum angle mount. I then set up the servo saver just as in the

stock application, but, unfortunately, I still had a problem: Two of the three 8-32 screws that are used to hold the front angle mount to the chassis interfered with the travel of the bellcranks. I fixed this by filing down the screws so that they were no longer in the way. The addition of a Futaba* S-132 mini servo completed this step.

With the suspension and servo saver mounted, the shocks came next. I went with the stock Kyosho red shocks (I de-anodized the color using the method I used on the roll cage) and used a heavier 90WT oil to offset the weight added by the roll cage. Although the front shocks are attached to the stock shock tower, the rear shocks are mounted a little differently. Holes had been pre-drilled in the roll cage so that the rear shocks could be mounted directly onto these pick-up points, and hardware for this is provided. To connect the adjusting



The holes on the top of the roll cage were tapped to allow the use of 4-40 screws, which hold the wing on more securely. The receiver was mounted on the rear bulkhead with the crystal set facing upward for easy access.



The stock Kyosho servo-saver was fitted along with a Futaba mini servo. Note the aggressive tread pattern of the Imex Olympia tires.

ULTIMA SPRINT CAR CONVERSION

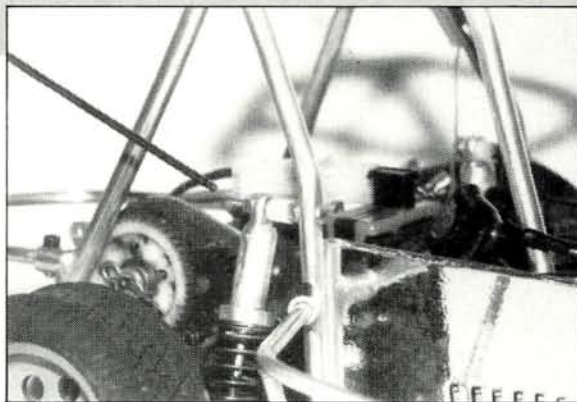
rods for the rear A-arms, you still have to mount the stock rear shock tower. (No provisions were made for an alternative location.) Because space in the chassis is limited, I decided *not* to use the supplied receiver mount; instead, I mounted a Novak* micro receiver to the rear bulkhead and a Victor* 4A speed control to the chassis plate (just in front of the rear bulkhead).

I then mounted Associated battery cups between the steering servo and the speed control. Since I assembled my batteries as split packs, I needed a way to hold them in the cup. I put a bolt through each corner in such a way that each extends about 1/4 inch above the cup. A nut is tightened on each bolt, and the batteries are secured with an elastic band that crisscrosses over the top of them and around the bolts (see photo).

With the guts in order, it was time to mount the roll cage and nerf bars on the chassis. I simply aligned the cage and the nerf bars with the pre-drilled holes in the chassis (for an accurate fit, you might have to do some bending), and I secured everything with the provided 4-40 button-head screws. Instead of securing the nerf bars to the cage with clips, as instructed, I tapped holes and secured them using 4-40x1/2-inch cap-head screws. With just a little more effort, you get a look that's much more professional, and everything is more secure.

With all the dirty work out of the way, it was time to prepare the body, the wing and the side panels for painting. I chose the McAllister* Silver Bullet sprint body and wing kit. After carefully hand-painting the headers, I applied MonoKote* chrome film to the inside of the panel. This isn't how it's usually applied, but it still had a chrome look on the sticky side, so I applied it that way and was quite happy with the results (and you have a chrome look inside the chassis, too!).

I sent the body and wing to Wally Caron at R/C World, and, using Pactra* Fluorescent Orange and Sprint White paint, he again came up with a high-profile paint scheme. Autographics*



The ball driver points to the shock location. The shocks are attached to the roll cage instead of to the stock shock tower.



The driver adds realism to the car.



You can almost feel the throbbing of the 600+ powerplant as it comes to life. The details, construction and scale looks are topnotch. Can't you just see yourself running alongside Kinser and Wolfgang?

decals and hand-cut MonoKote numbers added the final touch.

The completed body was mounted on the side panels with a thin strip of Velcro that was attached to both leading edges. As shown in the instructions, the side panels were bolted directly onto the chassis. The roll cage comes with two holes drilled in its top bar for mounting the wing. Again, I used a 4-40 tap on the holes and I attached the front part of the wing by running a 4-40x1-inch bolt through the top, securing it at the back with a 4-40 nylon lock washer. I then put about 1/4 inch of rubber tubing over the bolt before securing it to the cage. I hope the tubing will cushion the bolt when the car flips. I used an open-ended ball-end link for the rear wing mount. When I was positioned at the correct angle, I marked a spot on the wing and drilled a hole through the polycarbonate. Again, I attached it with 4-40 cap-head screws.

PERFORMANCE: With a new B&R* stock motor bolted into place, the car was ready for my first test session. You'd be surprised at how many people come out of the woodwork when an outlaw law sprinter hits the track! I ran at the North East Off-Road Racing Association's (NORA) clay-oval track in Enfield, CT. As far as I know, this is the only racing facility built entirely with funds provided by the town to promote the sport (a great idea!).

On the day of the test, the clay-based surface was covered with a fine film of dust that made it difficult to get hooked up, but it was great for kicking up rooster tails. If you didn't know better, you'd think that you were watching an unlimited hydroplane race! Once I had the knack of getting this beast around the track, however, my lap times started to look respectable.

After minor suspension adjustments to the right front and left rear spring rates, and a change of tires, I was ready for some serious action. I had originally mounted Imex* Olympia tires and Hobbico* anodized rims, which were great for show, but I switched to Schumacher* pin spikes and Pro-Line* rims to increase traction.

There weren't any other sprint cars to run

(Continued on page 19)

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I SURVIVED...

(Continued from page 120)

amps," which is where I like to charge my SCE packs. I reassembled the charger and drilled a small hole in the top of it faceplate so that I could adjust the current without opening it. I now had a \$24.95 adjustable, almost-constant-current charger!

The real test came when I charged an old pack on a Novak Peak Plus charger which is known to have a very soft pulse. I charged it until it peaked once; re-peaked it; and discharged it on the Turbo Charger. It gave me a reading of 660 seconds of run time. I then put a 30-ohm, 10-watt resistor on it overnight.

After putting the resistor on the battery I packed everything for the morning, and then I put myself on trickle-charge all around midnight, hoping for a good night's sleep.

Hint #9: To avoid having to rush in the morning, pack everything the night before the race.

Frantic Friday

I didn't trickle-charge as long as I wanted to, but woke at 4:30 a.m. I tried to sleep, but I was peak-charged for the day.

(Continued on page 138)

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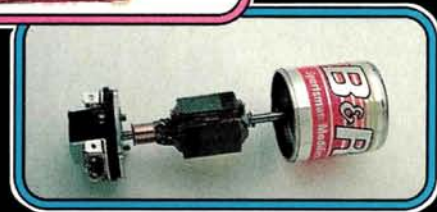
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I SURVIVED...

(Continued from page 134)

I took advantage of the extra time to try my new Radio Shack charger, by hooking up the battery I'd charged the previous night. It took 30 minutes to charge the 7-cell pack, and a second peak took about 8 minutes. While the instructions warn against charging 7-cells, I had no trouble, but I put a small DC fan on the back to keep the charger cool. When I discharged the same pack on the Turbo Charger, the reading actually went up from 660 to 662. This inexpensive charger seems to do just what more expensive ones do without apparently harming the batteries, but I'll continue to monitor the results.

By 6 a.m., I was returning from the coffee shop with a blueberry muffin, when I tripped on the stairs, stuck out my right hand (the one with the muffin) to break my fall, and instantly transformed my muffin into a blueberry crumb cake—quite literally! What a way to start the day! Would I smash the competition, too?!

Rich finally arose from the dead and we made it to the track in plenty of time for our heats. Things went pretty well, and I wound up 3rd in my first heat, with 16 laps. I returned to my pit and discharged the battery; nearly 100 seconds of run time left. I was advised to go up one tooth on the pinion to get some more top end.

I headed to the track for my second qualifier and was stopped by Hyperdrive owner Snuffy Smith, who had been helping Rich and me. Snuffy suggested that I try to run on the yellow line—the third line up the track. He said that when trying to run down on the black lines, I couldn't hold a consistent groove. I could hold the line for part of the lap, but my car drifted high or dropped onto the very rough blacktop infield. If I aimed for the yellow

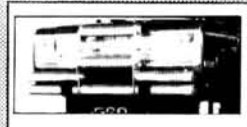
(Continued on page 144)

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KYOSHO

RS 200

READY-BUILT RALLYRACER

by JOE BRUNI

WHEN I first saw an ad for the new Kyosho* Ford RS 200 in *Radio Control Car Action*, I thought, "Here's a really interesting concept." It's a car that's not only a true scale model of the famous Ford RS 200 rally car, but it's also versatile enough for competitive on-road and off-road racing. When Chief Chianelli told me that I had been chosen to do the Track Report on the RS 200, I couldn't wait to start.

THE KIT: It seemed like a long wait, but eventually, the usual



large, sturdy, securely packed box arrived with its contents clearly labeled, so that initial parts organizing was a pleasure. The RS 200 includes a long list of high-tech features, the most important of which is that the car is almost completely assembled at the factory.

Probably the greatest advantage of buy-

ing a ready-to-run car is that you'll be out on the race course enjoying it just a short time after buying it. You can also feel confident that the car has been assembled by trained Kyosho professionals who will detect any flaws or irregularities in the car when they put it together. Another advantage is that the new R/C enthusiast will be able to see what a properly assembled kit looks like, and this should be of help in future kit building.

The major disadvantage is that if you aren't familiar with the working components of the car, it might be difficult to repair or detect the cause of any problems that arise.

The main chassis of the RS 200 is a thick, light, flat, alloy-aluminum pan on which practically all the car's components are mounted. The car has full-time 4WD by way of sealed-differential gear systems at each end of the main chassis plate. These diff systems are connected to each other by a hardened-steel shaft that extends the length of the car's right side. At each

end of the shaft are two identical diff pulleys. These are directly connected to the main diff shaft (which extends from the front and rear diff gearboxes) with two super-tough Pirelli toothed belts.

Also at the rear section of this drive shaft is a nylon gear. This gear is mounted in-line on the shaft, and it provides a point of power transfer between the pre-installed O.S.* MAX-10FP-B(K) engine and the RS 200's differential drive system. This new O.S. engine comes with a pre-mounted centrifugal clutch/braking system, a

whisper-quiet muffler system and an exclusive new Kyosho recoil pull-starter.

O.S. makes quick, pit-side, carburetor tuning a breeze with a conveniently located needle-valve adjustment screw. Even priming the O.S. motor is easier with the built-in, double-pump, primer fuel tank. One primer pump is used when the car is cold, and the other is used for re-starts.

NITRO or NI-CDS?

by STEVE POND

WITH THE INTRODUCTION of the RS 200 and other new, 1/10-scale, gas-powered cars, Kyosho brings us the next generation of gas racers. The gas racing of old involved only 1/8-scale on-road cars with .19 to .21-cubic-inch engines, which are extremely powerful. Because of their size and weight, with these engines, the cars demanded a pretty sizeable chunk of paved real estate to be run safely. They also needed a fair amount of support equipment. To get

the cars going, you needed a standard glow-plug connector, a starter with a bump-starting wheel, and—if you were running somewhere remote—a large, heavy battery to power the starter.

Kyosho's new 1/10-scale gas-powered cars are a departure from the gas cars of old in that they include a number of features to make running them considerably easier. Each of the new cars includes a recoil pull starter that eliminates the need for a starter and battery (a glow-plug battery is still necessary). For the hard-core enthusiast who prefers to use a remote starter to eliminate the extra weight of a

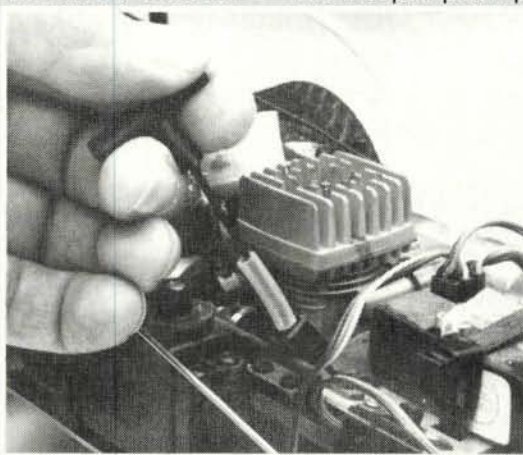
starter on the car, there's still a knurled flywheel and a slot in the chassis for bump-starting. The fuel tanks have two built-in primer pumps to help you start the engine. The first pump dumps fuel into the carburetor for cold starts, and the second pump injects fuel into the cylinder to make hot starts easier.

Finally, because the cars are 1/10 scale and are designed for both on- and off-road use, there are no limits on where you can run them. Most of the tracks designed

for 1/10-scale electric cars can be used by these gas-powered cars, as long as people don't mind their noise (but the 1/10-scalers are much quieter than the 1/8-scale cars).

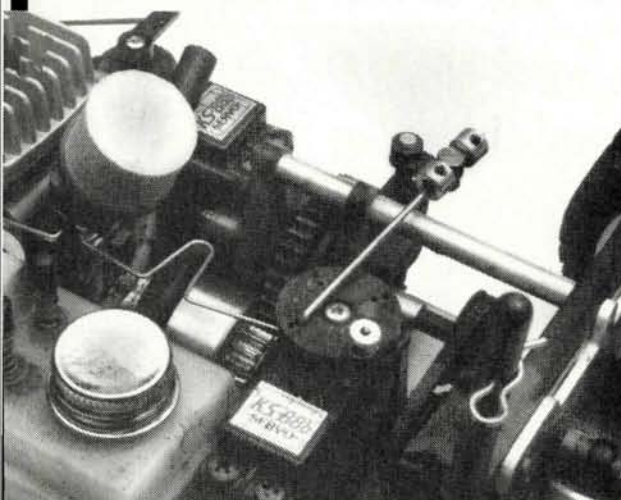
If you still aren't convinced that these cars are viable alternatives to electric cars, just remember that they never need a recharge—only a 10-second stop for refueling. There's no need to keep up with the latest battery-charging techniques, and you don't need super-matched battery packs that can only be used once a day, week, or month.

Want a gas car yet?!





The ready-to-run RS 200, sans body, shows a rather cluttered layout, but everything manages to fit—with no interference.



Top: The black shocks used on the RS 200 are a new, low-priced version of the Golds, with the O-rings molded into the casing. They work very well.

Above: The fuel tank has two primer pumps that make starting easy: One primes the carburetor for cold starts, and the other primes the cylinder for re-starts. The O.S. 10 powerplant drives the RS 200 via a centrifugal clutch and includes a pull starter for easy starting.

The RS 200 doesn't include the necessary radio gear, but it does include all the hardware required for almost any standard 2-channel system. Also included in the kit is the race-proven Optima-style suspension system, which includes wishbone suspension arms; four oil-filled, coil-over spring shocks; four, scaled, radial-pattern, rubber tires; and four high-impact plastic wheels.

ASSEMBLY: The Kyosho factory takes care of most things. You install the suspension system, the radio and the tires, and you do all the final body detailing. My RS 200 was ready for operation in approximately two hours.

The 15-page manual is well detailed with precise diagrams of all the necessary steps. My only complaint is that Kyosho should have included in-depth diagrams of the pre-assembled parts, just in case you have problems that require disassembly and repair.

Construction starts with

(Continued on page 193)

KYOSHO

FORD RS 200

Type On- and off-road rally
Scale 1/10
Sug. Retail Price \$399.95

DIMENSIONS:

Overall Length 13.9 inches
Width 9.4 inches
Height (without body) 4 inches
Wheelbase 10.6 inches
Track (f/r) 8 inches

WEIGHT:

Gross 58.6 ounces

BODY:

Type Ford RS 200 rally car
Material Polycarbonate

CHASSIS:

Type One-piece flat-pan
Material Aluminum

DRIVE TRAIN:

Primary Sprocket/pulley (belt)
Transmission Shaft drive
Differentials Front and rear gear diff
Bushings Nylon bushings

SUSPENSION:

Type (f/r) Wishbone
Dampening (f/r) Oil-filled, coil-over shocks

WHEELS:

Type (f/r) Injected-molded plastic
Dimensions (DxW) (f/r) 3x1.5 inches

TIRES:

Front/Rear Scale radial-pattern rubber

ELECTRICS:

Engine O.S. Max 10FP-B(K) (included)
Starter Kyosho recoil pull-starter

OPTIONS AS TESTED:

Kyosho Option House ball bearings; Pulsar EXP 2001 radio system.

COMMENTS:

The car sounds realistic, is very fast and versatile enough to run on and off road. Needle-valve location and built-in, double-primer-pump fuel tank make the O.S. engine easy to work with. The RS 200 handles very well—no signs of tipping or rolling! This can be attributed to the Optima-style suspension. Kyosho should include an exploded-view diagram of the pre-assembled components. Overall, an excellent choice for newcomers to gas-powered model cars.

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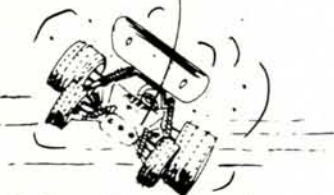
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I SURVIVED...

(Continued from page 138)

line, the car wouldn't have to work too hard to stay there, and if it dropped lower for a while, that would be fine.

Sure enough, I was much smoother and picked up another lap. My lap times were also faster and more consistent. I frequently saw Associated's Sean Ireland and Kent Clausen, Bud Bartos (of CAM and Bud's Racing Products), Hyperdrive's Ralph Burch, Jr. and Snuffy Smith, and Bolink's Rick Jordan (among others) helping people. They're there to represent their sponsors, and an unwillingness to help could adversely affect their sponsors' sales. As well as that, they want to help.

Hint #10: Don't be afraid to ask the pros for help, but be polite and don't bother them right before the A-Main.

At the end of the first two rounds of qualifying, I was looking at a spot in the C-Main. With so much going on, I had forgotten that Bill Henning was sending a body for me to enter in Concours, and I was confused when called to receive something at the front gate. It was a beautiful Thunderbird painted like a Cheeto's bag, with a hand-painted Chester Chee-

(Continued on page 154)

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SCOPING OUT

by JOHN RIST

Tekin ESC 600 PXT—High Performance

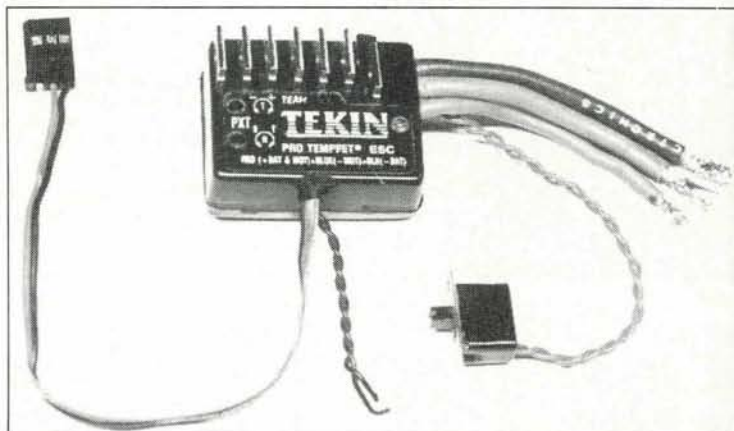
If you're serious about smallness, lightness and high performance, the Tekin* ESC 600 PRO XT electronic speed controller could be just what you're looking for. It comes without battery or motor connectors, so this speed controller is obviously intended for serious racing car drivers. The other clue that this controller might be "hot" is the three monster-wire setup that Tekin used for the battery/motor hookup. Of course, it's a forward-only with brake, rather than a reversing-style speed controller.

Most forward-only-with-brake-style, FET, speed controllers have four wires with which to hook up the battery and motor: two for the battery (one red, one black); and two for the motor (one red, one blue). A close examination of the inside of these speed controllers reveals

that the two red wires are tied together. The diagram shows that, in a three-wire setup, the + side of the motor is strapped directly to the + side of the battery. By using a large-diameter wire that's as short as possible between the motor and the + side of the battery, you can eliminate much of the voltage loss usually associated with speed controllers, and this is an advantage.

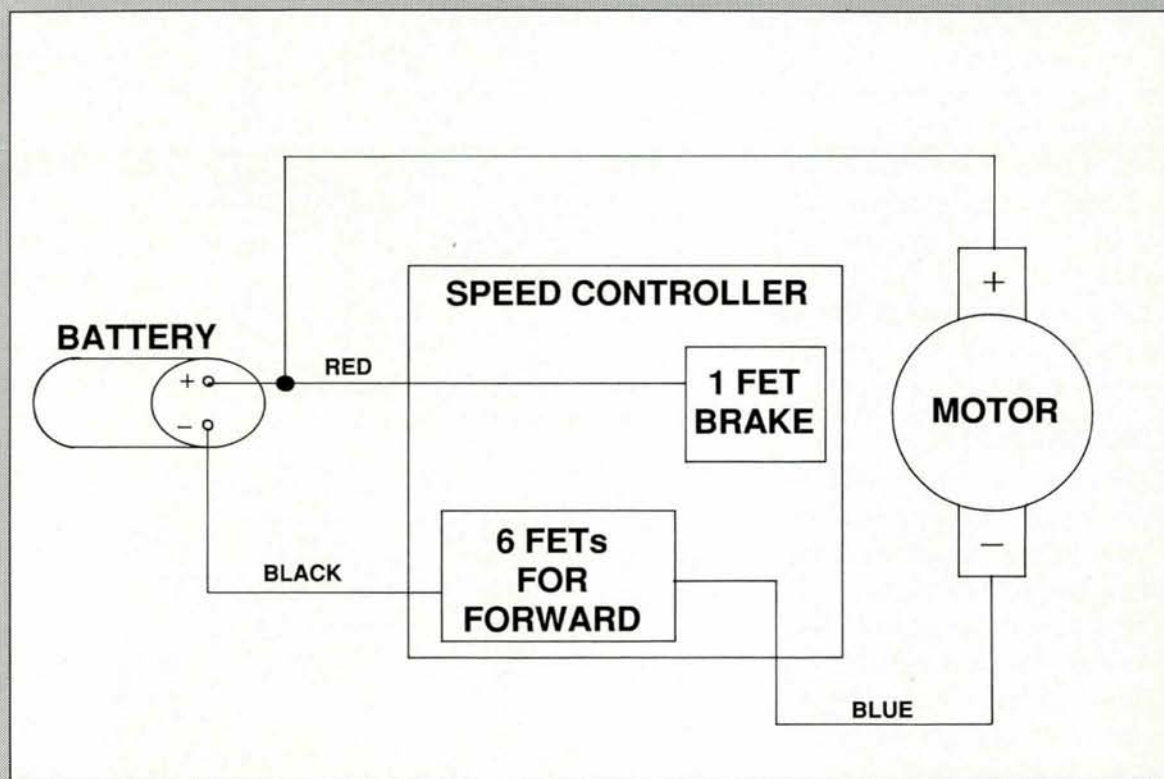
In previous

"Scoping Out" articles, comparing a speed controller with a full four-wire-and-connectors setup with the same controller



The ESC 600 is currently the most powerful speed controller in the Tekin line, and it's considerably smaller and lighter than equivalent speed controls of other brands. It's ideal for applications that have limited space.

Tekin's ESC 600 speed controller has only three wires: blue for the motor, and black and red for the battery. The second wire for the motor is a separate one that runs directly to the positive lead of the battery.



measured at the 2-inch point on the wires (no connectors) revealed a two-to-one difference in voltage loss. If you're searching for maximum performance, short wires are better than long wires, solder joints are better than connectors, but if you use connectors (I always use one for the battery), use high-grade ones like Sernos* Powerpole silver-plated connectors.

The Tekin ESC 600 is a true racing speed controller with the following features:

- Racing-style, forward-only with brakes
- Seven FETs: six forward and one reverse
- Tempfet FETs, which eliminate the need for fuses
- Handles four to 10 cells
- Built-in LED for setting full throttle and brake
- Choice of receiver connector
- Full set of heat sinks
- Comes with motor capacitors, screwdriver and instructions
- 120-day warranty.

In the November issue of R/C Car Action, I looked at the ESC 300, which is the less expensive Tekin Tempfet speed controller. I found that the Tempfet FETs really do allow you to eliminate the fuse. The advantage of eliminating the fuse is that, for a fuse to blow, it must have some resistance. As excessive current flows through a fuse, the power consumed by it generates heat, which melts and opens the fuse.

I recently measured the voltage drop across a 30-amp fuse at 12 amps, and I found that it was .03 volt, which isn't much, but it is .5 percent of the total battery voltage, and I've had a fuse blow for "no apparent reason" and put me out of a race.

To evaluate a speed controller, first remove the case and inspect the manufacturer's workmanship. When I opened the ESC 600, I immediately noticed how compact the parts are. Tekin has done an exemplary job of packing very many parts into a very small package. The

TEKIN

ESC 600 PRO XT

DIMENSIONS:

Height	.5 inches
Width	1.5 inches
Overall Length	1.1 inches
Weight (without wires)	1.2 ounces

TUNING:

Access to Controls	Good
Ease of Adjustment	Fair

PRICE:

Sug. Retail Price	\$150
Warranty	120 days

ELECTRICAL:

(Manufacturer's Specs)

Max Voltage	10.2 volts
Min Voltage	4.8 volts
Max Current Forward	720 amps
Continuous Current Forward	240 amps
Resistance	.0025 ohm

TEST PARAMETERS:

Voltage	6 volts
Current	12 amps
Voltage Drop, 2-inch wire	.06 volt
Resistance with 2-inch wire	.005 ohm

COMMENTS:

The small, lightweight Tekin ESC 600 is a hot performer that's virtually "burn-out-proof." The Select Pro Mosfet and monster wire produce a controller that has the lowest resistance of any 6-FET speed controller I've tested. The manual lacks specific instructions or diagrams for connecting a three-wire speed controller.

printed-circuit board is glass epoxy, and the solder joints looked good.

Next, the lab test. My lab consists of an oscilloscope, a digital voltmeter, a resistor load bank and a 6V 30-amp lab supply. The oscilloscope monitors the controller's output to guarantee that it's fully on. The digital voltmeter is used to take all the voltage-drop readings and to verify the current meter's reading. The resistor load bank is a bank of 40, 12-ohm, 5-watt power resistors; they can be switched on and off, one at a time, to vary the load between .6 amps and 20 amps.

In series with the resistors is a 25-amp

Simpson current meter and a 1-percent .01-ohm resistor. By measuring the voltage drop across this resistor, the current-meter's reading can be double-checked. Of course, the lab's power supply provides the test current.

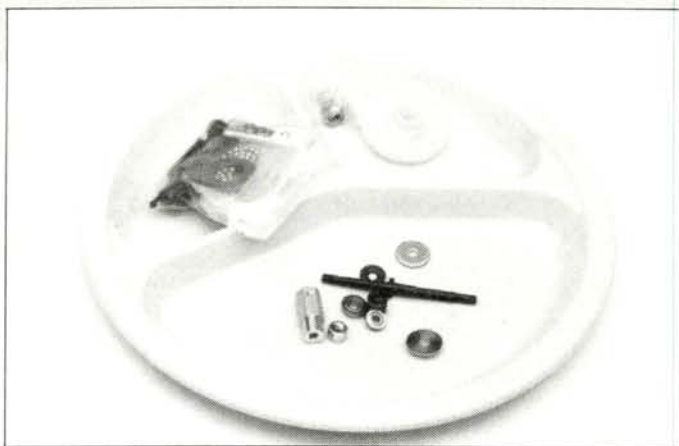
With a racing-style speed controller (no motor or battery connectors), I use needle probes to measure the voltage drop at the 2-inch point on the wires. I chose this wire length because it's the minimum length that permits a controller to be "direct-wired" to a car. Following the supplied instructions, I installed the ESC 600 into my test setup.

The instruction book is quite good—even including set-up hints for some of the more popular radio transmitters. The adjustment is the standard two-pot type: one for setting neutral, and the other for adjusting full "on." While adjusting neutral and full throttle, I found that the red LED set-point indicator was very accurate when compared with the results obtained by my oscilloscope.

One of my few disappointments with this speed controller concerns the supplied screwdriver. It was the same as that supplied with the ESC 300, and it's useless. (How's that for griping about a free screwdriver!) The adjustment screws are quite small, and the screwdriver has a misshapen, soft-plastic tip, which wouldn't mate with these small screws. I used my jeweler's screwdriver.

The ESC 600's adjustment screws are the reverse of what you'd expect (counterclockwise adjustment should give more throttle, not less). By printing this information on the cover of the controller, however, Tekin has eliminated the guesswork in determining the direction in which you should rotate the trim pots. The oscilloscope verified that the indicated direction of rotation was correct. Measured at the 2-inch point on the wires, the voltage drop was .06 volt. This gives a .005 volt-per-amp voltage drop, or .005 ohm of resistance. The 2-inch reading is

(Continued on page 226)



Using a plate with divided sections allows you to easily keep track of hardware and parts.

PART 2 BUILDING IT RIGHT

by WALLY DAVID

ORGANIZATION IS THE KEY

IN THE FIRST installment of "Building it Right," I discussed the tools and supplies needed to make assembly go smoothly and the importance of reading the instructions before beginning construction.

For this endeavor, I chose the Yokomo YZ-10, which is imported by Associated. I've never built one of these cars before, so I have no preconceptions, and I'll be able to approach the project with a fresh outlook. In this issue, I'll discuss choosing and setting up a work area, organizing tools and parts, and beginning construction.

Work Area

The ideal work area is one that you don't have to clear off when you stop working for the day. If you live with other people, this may not be easy. When I lived at home, I used a 6-foot-long folding table that I could set up anywhere in the house and move into my room when I needed it. Now that I live by myself, I can leave my stuff set up, and no one tells me to do otherwise. If you're fortunate enough to have a work area in your basement, then you're all set.

I usually spread an old towel on my table and secure it with some masking tape. The towel serves two purposes: It protects the table from scratches and dirt, and it stops tools and parts from rolling around and falling on the floor.

For me, crucial components of my work area are my television and VCR. I always need something turned on, if only for the background noise. What better way to keep up with all the full-scale races that I taped on the weekend while I was out racing my cars?

Organizing Tools

To make building go smoothly, organization is critical. If you're constantly looking for the proper screwdriver or Allen wrench, construction will take forever! I've wasted a lot of time by searching for a tool that was hidden under a pile of other tools and parts. When you've established a system, stick with it and put each tool back *in order*. I may sound like a surgeon, but this *is* an operation! After all, you wouldn't want to leave a scalpel inside the patient, would you?

I try to arrange my tools by size, in descending order, from left to right, by type of tool. Because I'm right-handed, I have the tools on my right side and the parts on the left. I like to keep the electrical tools (the Dremel tool, the electric drill and the soldering iron) to the right, at about a 45-degree angle. They can be reached easily, but they're out of the way when I don't need them.

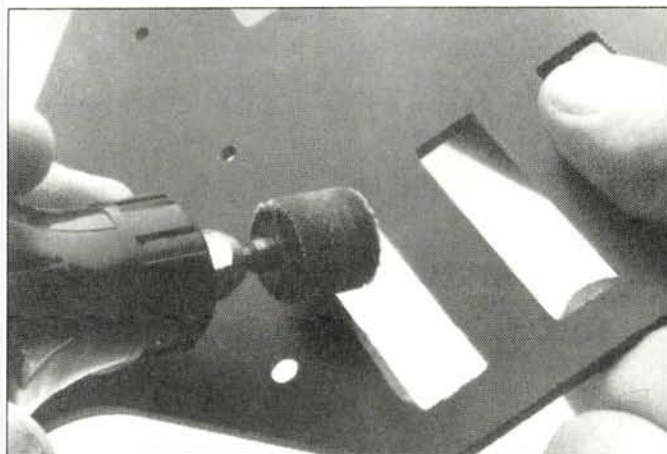
It isn't important what system you use, but *some* sort of organization is needed.

Organizing Parts

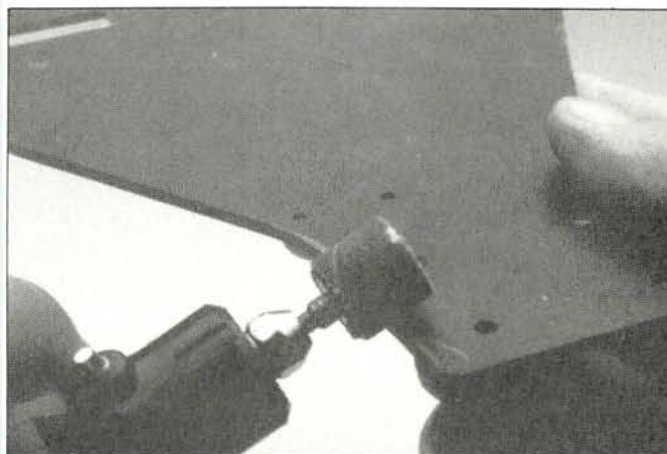
More important than keeping your tools organized is keeping your parts in order. I use plastic or paper plates with dividers to keep things separated. The YZ-10's parts and hardware come in num-

bered bags, and these should be opened in order. Each bag contains only the parts needed to complete that particular step. Divided plates make it easy to put the parts in one section, the hardware in another and a completed assembly in another.

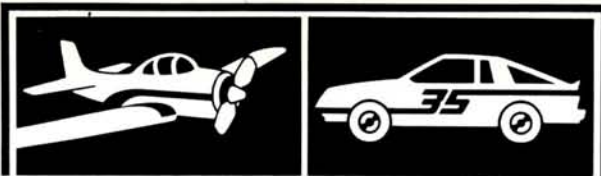
If you're building a Tamiya kit, you'll find that the hardware comes in four or five lettered bags. You can empty each



When preparing the battery slots, a Dremel tool can be substituted for a file. Take off the sharp edge of the slots to prevent the battery shrink wrap from being sliced off.



To allow full travel of the suspension arms, the instructions recommend that you round off the top edge of the front of the chassis, directly under the point where the arms are located.



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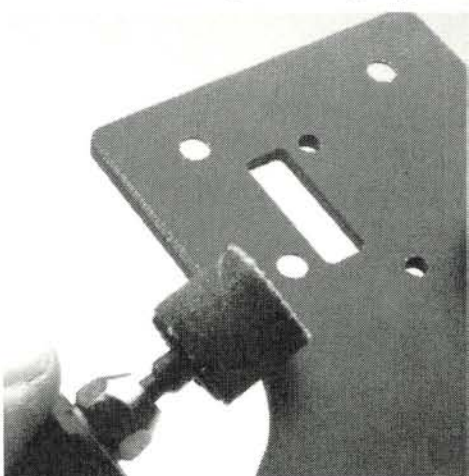
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BUILDING IT RIGHT

bag into a different section of the plate. As the parts are needed for each step, take them off the plastic parts trees and sort them onto the plates. Again, it isn't important whether you use plates or small boxes: It is important that you use some method of keeping track of all those parts. You'll be glad you did!

The First Step

It's time to start building the car. Preparation of the chassis is the first assembly step. To prevent the sharp edges from cutting the shrinkwrap on the cells, file the edges of the battery slots with a hand file. You'll also have to grind the top edges of



Make sure you round off the rear of the chassis, too.

the chassis to permit full travel of the suspension arms (see photos). The instructions tell you to use a hand file, but I chose to use my Dremel tool with a sanding drum and a small grinding bit. The Dremel can really speed up the process, although you must be extremely careful not to take off too much of the graphite.

Well, that's all for now. Next time, I'll discuss in detail the construction of the YZ-10. I'll cover by-passing the backbone chassis stiffener (which requires drilling and gluing), in favor of using the new Yokomo Upper Chassis Stiffener from Jammin' Jay Halsey Products. See you next month!

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I SURVIVED...

(Continued from page 144)

tah on the cover. I was very glad I'd practiced with the spare T-Bird body on Thursday, because I knew this one had a good shot.

In a note, Bill apologized for not having had time to do an interior, so I had to scramble. I asked Martin Buchanan of Racer's Haven to bring back any driver figure he had in his shop, as well as some paint and a sheet of polycarbonate.

That evening, after dinner with Rich Hemstreet, Rick and Ricky Jordan and Rick's wife, Linda, I went back to the hotel—exhausted!

Super Saturday

At the track, I checked my car; looked good! Before my heat, I asked Bud Bartos and Jan Limpach to look over my motor to see what if they could get anything else out of it. Jan took it apart, cleaned it, then played with the spring tension. Bud played around with it on his dyno and advised me to go up one tooth.

Armed with my newly tuned motor, I improved my qualifying time quite nicely. I still came in 4th with 17 laps, but, according to the print-out from the lap-

(Continued on page 162)

REEDY

Modifieds

Reedy Modifieds Are Bursting Through With New Technology

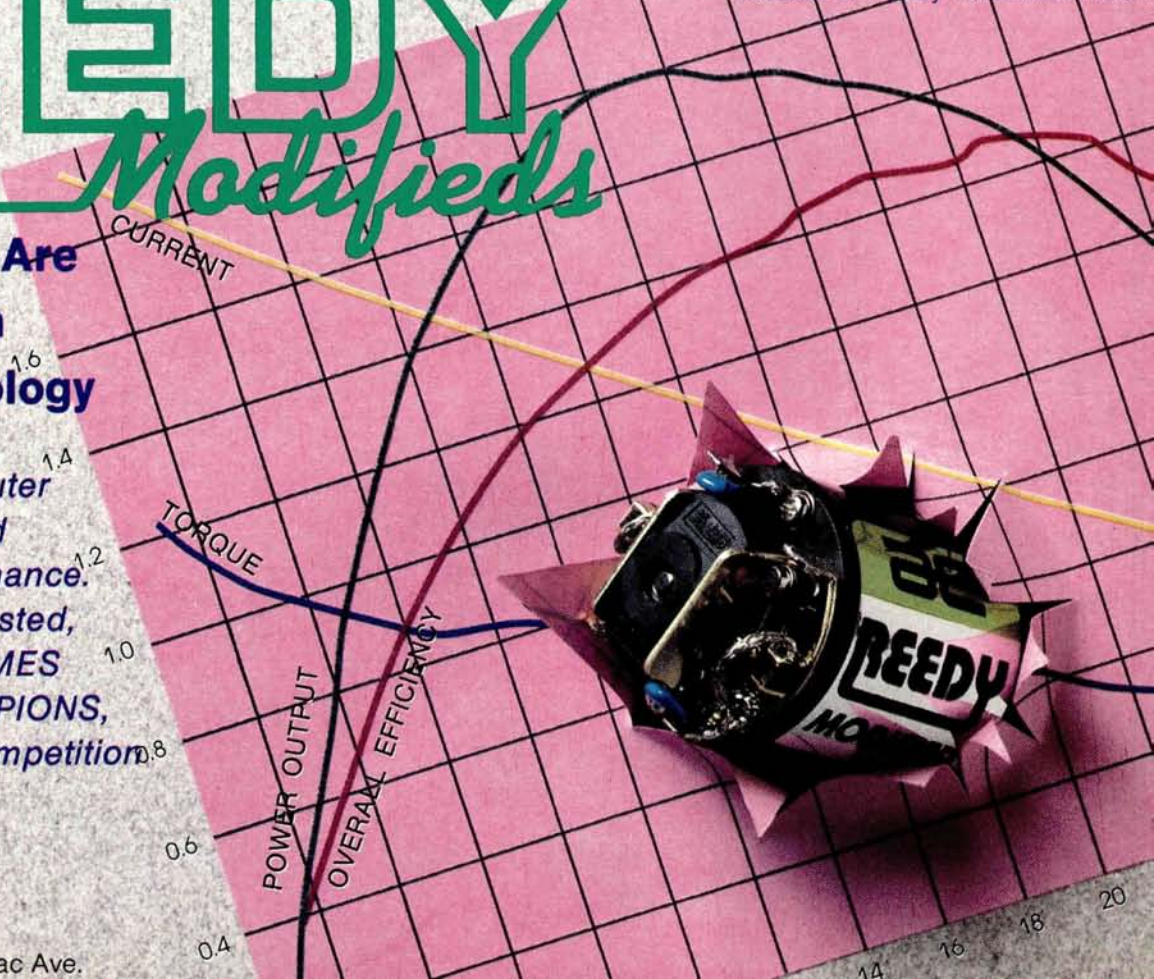
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(Graph shown represents actual
readout of Reedy Modifieds motor.)



PRO PANTHER

by BILL O'BRIEN

Funny Car



**FAST
FUN!**

"SUNDAY, AT NATIONAL Speedway! See 225mph nitro-burning funny cars battle it out down the quarter-mile!" I'm a gear-headed hot-rodder at heart, and during the summers of the late '60s and early '70s, those words got me through the weekdays. Jack-rabbit starts were the hallmarks of my mis-spent youth, as, with a friend, I always found a reason to put down rubber between stoplights on the boulevard.

Even in R/C scale, most of my cars have slicks at the corners and find their way onto the pavement rather than the dirt for which they were designed. (In case you're wondering: In the land of concrete

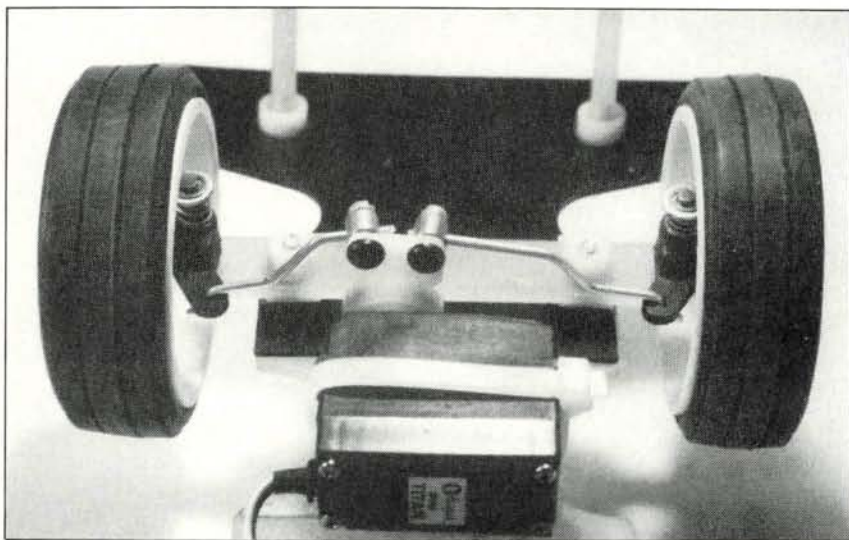
curbs, he who has the strongest chassis wins, and off-road chassis are pretty strong!) Now, thanks to Parma International,* I don't have to "kludge" together my funny cars with chopped suspensions and bracing; I can have an honest-to-quarter-mile funny car that's designed to go straight—and at a respectable price!

THE KIT: As you open the black box, the first thing you see is the crystal-clear Lexan Olds Firenza funny-car body. Parma continually asserts its supremacy in body crafting, and this Firenza continues the pattern. The Funny Car kit is itself a further refinement of Parma's Pro Panther series of on-road cars. Two

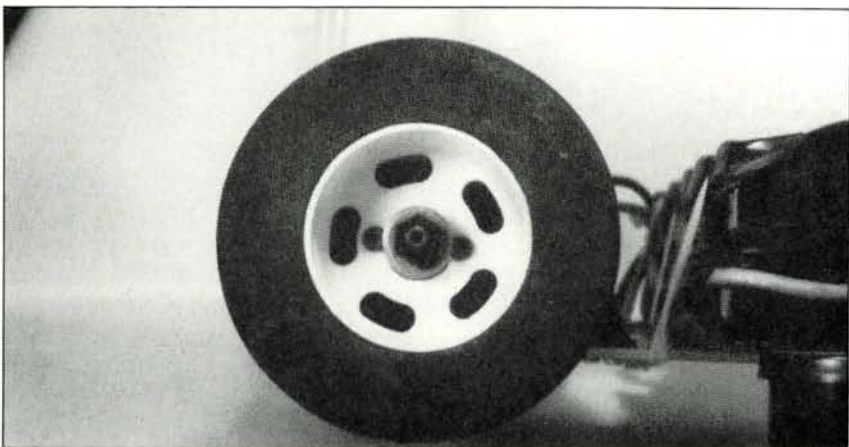
PRO PANTHER Funny Car



Low-profile ribbed front tires are extremely difficult to get onto rims. You may want your dog to pull one side of the tire while you squeeze in the wheel.



There are no high-tech components in the front end. A 1/12-scale-style steering setup was used.



Shown are the right hub and thrust washer. Don't be fooled by the assembly manual; the wheel must be mounted before installing the thrust-washer assembly.

funny-car versions (standard and deluxe) are available; they have the same aluminum motor pods, 13.75-inch fiberglass chassis, bushings, wheels, tires and bodies. The deluxe kit also includes a Parma K Stock motor (based on Trinity's Monster Stock), six loose sub-C SCR battery cells with braided wire, Tamiya/Kyoshok style connectors and a Parma mechanical resistor speed controller.

Simply put: The Pro Funny Car applies standard 1/10-scale on-road technology to a slightly stretched single-plane chassis (there's no radio plate). There's even a ball differential rather than a geared axle.

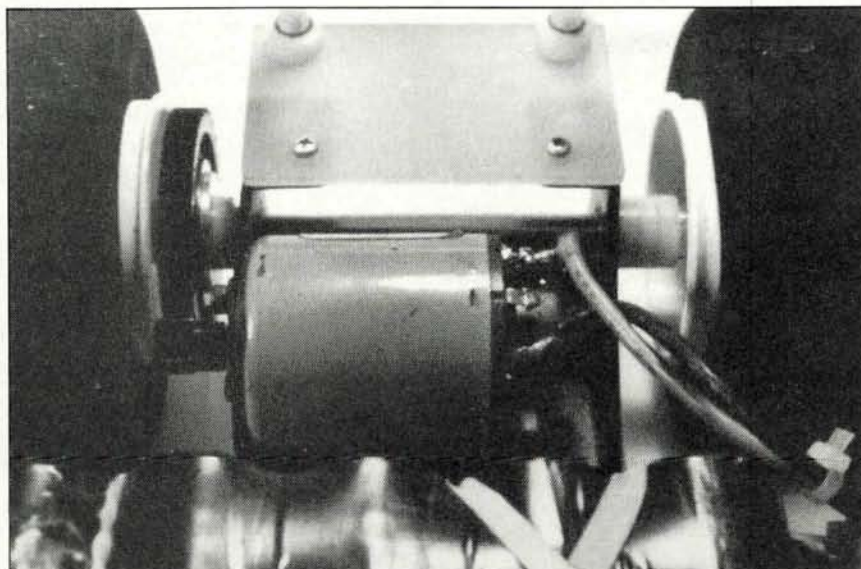
CONSTRUCTION: The instructions are very poor. Even though the construction steps are relatively few, and anyone who has ever put together an on-road car can (and should) ignore them, if this kit is really meant for beginners, the company *must* pay more attention to its documentation.

Two of the manual's pages are taken up by the cover and an ad for Parma batteries; one page shows a list of the parts you'll need to complete the kit; two half pages are used to explain how to trim and paint the body and assemble the battery pack; a half page is occupied by an exploded diagram of the axle/differential assembly. If you've been keeping track, you'll know that leaves only three-and-a-half pages for the assembly instructions.

Granted, there are 12 black-and-white photos, but two of them are out of sequence, two are redundant, and one shows parts that aren't mentioned in the text. Even the exploded view of the differential is only slightly useful. The diameter of the thrust-bearing assembly that caps the geared side of the axle is 1/2 inch, and that, in itself, isn't a problem. Unfortunately, the diameter of the center hole in the rear wheel is only 3/8 inch, and have you ever tried to "thread a camel through the eye of a needle"?

A quick call to Parma solved the riddle. You must install the rear wheel on the hub mid way through the construction of the differential, and then complete it with the thrust-bearing assembly. If you need to change your right rear wheel, you must first partially disassemble the differential. Is that really the current level of American know-how?

Wheels and tires are another problem.



The engine pod is classic on-road technology; it's spacious enough to give easy access to the motor, yet strong enough to maintain its rigidity. On the axle, notice the plastic spacers that are used to space the rear wheels properly. The tires aren't as wide as the wheels.

The rear wheels are $1\frac{1}{2}$ inches wide; the foam tires are only $1\frac{7}{16}$ inches wide. You can stretch the tires to fit, but should you have to? (And when you do, be sure to glue them into place.) The front wheels are 2 inches in diameter, but the front tires are only $1\frac{9}{16}$ inches. The single longest construction step is getting these rubber tires to fit the wheels. The second-longest construction step is the time you'll spend smoothing out the surfaces of the tires to make them even and relatively parallel to the circumference of the wheels.

Missing from the kit is any type of bellcrank. Parma suggests that you mount the steering servo longitudinally across the front of the chassis ($\frac{1}{12}$ -scale on-road style), which I did.

On the brighter side, the design of the engine pod is one of the best I've seen. The front is entirely open, allowing full access to (and easy removal of) the motor; the axle slips in through bushings you've installed in the pod; and the proper side-to-side offset is achieved with nylon spacers. A slim spacer described in the manual wasn't to be found in the kit, but it isn't critical.

The front end is the simplest part of the construction. The kingpins, steering blocks and hubs are mounted on a narrow fiberglass brace, which, in turn, is mounted on the chassis. Caster and camber changes are accomplished with the included wedge-shaped shims. Parma has

wisely provided a front bumper, which will protect your car.

The battery-pack assembly is described in detail. I was dismayed to find that the sub-C SCRs didn't have solder tabs. While the soldering procedure sounds quite simple in the manual, in the *real* world, soldering batteries without solder tabs, end-to-tip, is a dicey undertaking. You have to get the batteries hot enough to carry the solder, but not so hot that they start to break down. To snap the batteries together while the solder is still molten, you'll need a professional-quality soldering iron, good eyes and *great* reflexes.

The K-Stock motor went in after a half hour of run-in at 3 volts. I opted to leave out the mechanical speed controller, because, with the servo needed to activate it, it added too much weight for my taste, but the Parma mechanical speed controller is an excellent unit. Instead, I mounted a Kyosho* SC1000 speed controller and the appropriate radio equipment.

I also tossed out the 32-pitch gears in favor of a Trinity* 48-pitch spur-and-pinion. The 32s will certainly work, but at 48 pitch, you're running with very little transmission slop, but not increasing the chance of stripping the teeth when you hit the brakes (hard!), as you would if you were running a 64-pitch gear.

PERFORMANCE: After all my criticisms, you might think you should give

(Continued on page 234)

PARMA

PRO PANTHER FUNNY CAR

Type Funny car
Scale $\frac{1}{10}$
Sug. Retail Price \$140, basic;
\$200, deluxe

DIMENSIONS:

Overall Length 23 inches
Width 6.5 inches
Height 6 inches
Wheelbase 12.5 inches
Front Track 4 inches
Rear Track 5 inches

WEIGHT:

Gross (w/bat.) 2.61 pounds

BODY:

Type Olds Firenza
Material Lexan

CHASSIS:

Type Single-plane
Material Fiberglass

DRIVE TRAIN:

Primary Pinion/spur
Transmission Direct drive
Differential Ball diff
Bushings Bronze bushings

SUSPENSION:

Front: Type Independent
Dampening Coil springs
Rear: Type None

WHEELS:

Front: Type One-piece plastic
Dimensions (DxW) 2x1.75 inches
Rear: Type One-piece plastic
Dimensions (DxW) 1.625x1.5 inches

TIRES:

Front Synthetic rubber
Rear Foam

ELECTRICS

Motor Parma K-Stock
Battery 6-cell Sanyo sub-C SCR
Speed Controller Parma mechanical

OPTIONS AS TESTED:

Kyosho SC-1000 electronic speed control.

COMMENTS:

The Parma Pro Panther Funny Car is certainly a capable entry-level car that will get you into the action. The deluxe kit will take you from the box to the track in a short time, but if you want to add your own motor, battery, electronic speed control, bearings, etc., the basic kit might be the way to go. Parma should upgrade the manual to provide clear, accurate assembly instructions and helpful diagrams, and the tires and wheels could be sized better.

Bru-Line Super System

A full range of coordinated Monster Truck Wheels



Truck shown above with dual adapters and wheel covers. This modification can be used on many other cars and trucks.

Bru-Line "Super System"

wheels allow most 1/10 and 1/12 scale cars and trucks the use of smaller truck tires all the way to the ultimate Clod Bluster tires.



Kyosho Double Dare with "Super System" wheels and Clod Buster tires. Just one of the many cars and trucks that can use this conversion.

Send \$2.00 For Catalog & Tech Sheet

Bru-Line Industries • P.O. Box 3786 • Center Line, MI 48015

I SURVIVED...

(Continued from page 154)

counting system, my lap time dropped by more than 1 second per lap.

Hint #11: Make use of all information. At many big races, results sheets that show a lap-by-lap account of the race are displayed. This info will enable you to see

if a change you made achieved the intended results. It lets you see the effect of your changes on your lap times.

One word of advice about car preparation: Secure your battery pack before you get to tech. I obviously hadn't heeded my hint #7, as Rich heard a clunk when he tilted my car forward to put in the transponder. I had forgotten to tape in the pack,

and with my car about to go to the track, I had to hurry.

Bolting toward the pits (trying not to run down too many people!), I tripped on a tent cord. As the ground rushed toward my face and visions of a smashed car filled my mind, I stuck out my right hand (my "muffin" hand), which hit the

(Continued on page 180)

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- Hobbico AC/DC Charger

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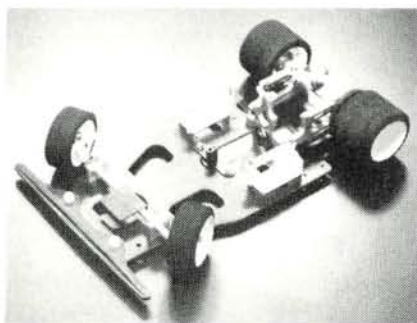
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HYPERDRIVE Hyper 10 Sport

The Hyper 10 Sport is a new club racer kit that has been designed with the same attention to detail and quality as the competition-proven Hyper 10. The Sport is designed to enable new racers to progressively upgrade their cars to a race-ready Hyper 10 competition car. Its features include: new hyper-torque differential (a pro-type graphite-axle diff); hyper-rings (larger and super-hard differential rings, which don't require glue or adhesive); ultralight fiberglass chassis and graphite rear axle; ultralight aluminum hubs; adjustable ride height; adjustable caster; adjustable wheelbase; steering stops (to eliminate the possibility of hung-up front wheels); PDS T-plate suspension; and special, trick, steering-servo mount on the front axle. The complete kit comes without electronics, motor, body, tires and wheels.

Product no. HY 0012. Price: \$239.95.

For more information, contact Hyperdrive Racing Systems, Inc., 3210 Howard Nickell Rd., Fayetteville, AK 72703.



C&M MFG. Accessories

C&M Mfg.'s full line of racing accessories includes: shrink tubing in red and black; 14- and 16-gauge high-temp motor wire in red and black; body

clips; body washers in black or white; nylon nuts in black or white; and a full line of body posts, from 1 to 5 inches in length, also in black or white. All accessories are sold individually or in bulk.

For more information, contact C&M Mfg., P.O. Box 680-233, Park City, UT 84068.

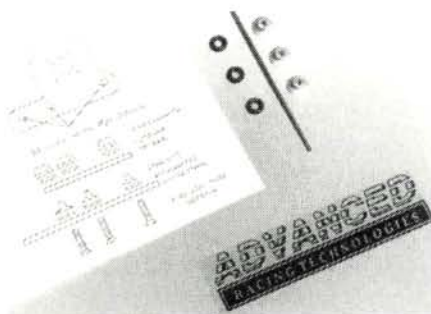


BOLINK 24-Ounce Right Stuff

Bolink's popular Right Stuff motor spray and cleaner removes carbon and other harmful debris from your motor, and this will result in longer, stronger runs and reduced wear on the brushes and bearings or bushings. Right Stuff now comes in a larger can that has a new label.

Product no. BL-6076. Price: \$17.95.

For more information, contact Bolink R/C Cars, Inc., 420 Hosea Rd., Lawrenceville, GA 30245.



ADVANCED RACING TECHNOLOGIES 12L Suspension Kit

Put yourself in front of the pack with this rear-suspension modifying kit for the RC12L. The kit includes cone nuts,

O-rings and complete installation instructions. Give your 12L increased suspension flexibility for more bite on slick tracks.

Part no. 2001. Price: \$10

For more information, contact Advanced Racing Technologies, 460 Cypress Lane, Suite F, El Cajon, CA 92020.



HOBBICO 900 Series Chargers

New from Hobbico are three AC/DC chargers that offer reliable operation, high-tech styling, economical pricing, and all the popular features demanded by today's modelers. Model 900 (Cat. no. HCAP0125) AC/DC Auto-Charger features a reliable 15-minute precision timer, black-anodized faceplate, powerful heavy-duty transformer, trickle pilot light and 24-inch output cord (Kyosho-style connector and Tamiya adapter included). Model 905 (Cat. no. HCAP0150) AC/DC Multi-Charger replaces the current Hobbico model and includes all the features of Model 900, but it utilizes an accurate, easy-to-read charge/discharge ampmeter. Hobbico's Model 910 (Cat. no. HCAP0175) Variable Rate AC/DC Multi-Charger includes all the features of Models 900 and 905, as well as a current-rate adjustment dial, voltage-monitoring jacks and charge-rate chart. Choose the charger that best suits your needs—they're all great and very reasonably priced.

Price: \$39.95; \$57.95; \$64.95.

For more information, contact Great Planes Model Manufacturing, 1608 Interstate Dr., P.O. Box 4021, Champaign, IL 61820.

Descriptions of new products appearing on these pages were derived from press releases supplied by the manufacturers and/or their advertising agencies. The information given here does not constitute endorsement by **Radio Control Car Action**, nor guarantee product performance or safety. When writing to the manufacturer about any product described here, be sure to mention that you read about it in **Radio Control Car Action**.

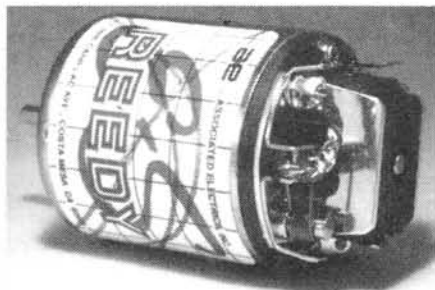


TEAM LOSI Racing Motor

Team Losi and Gil Losi Jr. now answer the often-asked question, "What's the best 2WD motor?" It's Jr's Choice. After months of testing and development, this new wet-mag motor offers a broad "driveable" power band that's essential for a winning performance in a 2WD car. The unique armature design allows excellent performance with 6 cells on slick tracks and unbelievable power and speed with 7 cells. As with all Revolution modified motors, Jr's Choice features a hand-wound, multi-wind armature that has been precision balanced and trued on state-of-the-art equipment. Wet-pressed magnets, full ball bearings and special motor brushes are also standard. A combination of speed, "driveable" power band and versatility makes this new Revolution motor...Jr's Choice!

Part no. 6103. Price: \$80.

For more information, contact Team Losi Inc., 1655 E. Mission Blvd., Pomona, CA 91766.



REEDY MOTORS Esprit Series

Introducing the Esprit Series motors that are modeled after Yokomo's Esprit motor, which set the worldwide standard for R/C car racing. The economical Esprit Series motors deliver

the reliable performance that racers have come to expect from Reedy Modifieds. Mike Reedy developed the individual winds, and all motors are built to demanding specifications that have been established by extensive testing in the Reedy motor lab that bred five IFMAR World Champions. The Sport models incorporate bushing-type bearings; the Ultimate models use ball bearings for extra life.

Price: \$28 to \$45.

For more information, contact Associated Electrics, Inc., 3585 Cadillac Ave., Costa Mesa, CA 92626.

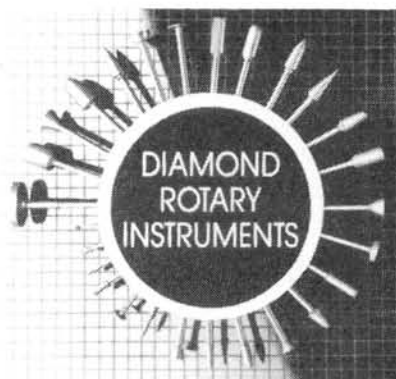


TEAM ASTRO AC/DC Peak-Charger

Team Astro introduces its new model 111 AC/DC Peak Detector charger, which will charge from four to 12 cells, with capacities ranging from 450 to 1700mAh. Charging 12 cells from 12 volts is made possible by a sophisticated AC/DC switching converter that generates a constant 4.5-amp charge rate. This allows the amps to stay constant even if there's a drain on the electrical source. The charger can also be used to supercharge your batteries for competition. Charge the battery to peak, then set it aside for 30 minutes; about 5 minutes before the race, put the pack back on the charger and peak a second time. The battery will maintain this supercharged condition for 5 to 10 minutes and provide great starting-line power.

Price: \$139.95

For more information, contact Team Astro, 13311 Beach Ave., Marina Del Rey, CA 90292.



ALAN INSTRUMENTS Sintered Diamond Bits

Alan Instruments' sintered diamond bits contain diamond particles *down to their cores*, and this makes them extremely durable and consistently good for cutting. The burrs are available in hand-piece and friction-grip shanks, and in four grit sizes for porcelain, chrome/cobalt, nickel/chrome and other hard materials, and they come with a money-back guarantee. Also available is a separating disc with a sintered diamond edge.

For more information, or to receive a catalogue, contact Alan Instruments, 100 N. Calvin Court, Tonawanda, NY 14150.



AEROTREND Spiked Tires

Aerotrend's front and rear spiked tires are made of a hard rubber compound that resists premature wear without affecting the tires' superior traction on all terrains! The tires are also designed for use on 1 1/2-inch rims, and this makes them ideal for use with the original RC10 rims and many of the older Tamiya cars.

Product no. 3962; 3963. Price: \$8.99; \$9.99.

For more information, contact Aerotrend, 31 Nichols St., Ansonia, CT 06401.

WHAT'S NEW

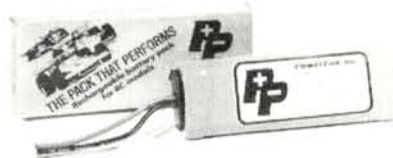


HIROBO Peugeot Turbo 4WD

The Peugeot Turbo 4WD has the same mid-engine design, belt drive and molded chassis as the popular Toyota Celica 4WD. This solid design comes packaged with a 2-channel JR radio fully installed, and this makes for a truly ready-to-run buggy that's built to take abuse! Other features include: Mabuchi 540S motor, mechanical speed control, 4-wheel independent suspension, and upper and lower A-arms.

Price: \$289.99

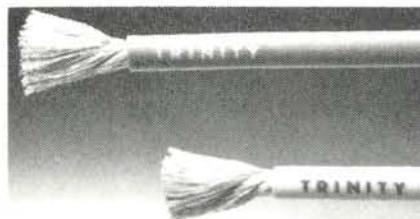
For more information, contact Hobby Dynamics, 4105 Fieldstone, Champaign, IL 61821.



POWER-PAK Ni-Cd Packs

Power-Pak of Morton Grove, IL, is quickly becoming one of the nation's largest sources of power for R/C vehicles. Power-Pak's Ni-Cd packs are all quick-charging and deliver 150mAh to 1300mAh. They also offer sealed-lead acid batteries that provide standby power for larger scale models and boats. The batteries in all packs are matched to ensure uniform discharge rates and performance characteristics.

For more information, contact Power-Pak, Inc., 6216 Oakton St., Morton Grove, IL 60053.



TRINITY Jumper Cable

Trinity's new Jumper Cable is one of the largest, most resistance-free wires available for your R/C car. The Jumper Cable is a whopping 12-gauge wire with hundreds of strands of silver-plated pure copper wire. Its size doesn't affect its flexibility; it has high-temperature silicone insulation, so it's flexible enough for the tightest applications. Imprinted with the Trinity logo, the Jumper Cable comes in bright yellow (5068) or purple (5062), and it's packaged in 2 1/2-foot lengths.

Price: \$3.99

For more information, contact Trinity, 1901 E. Linden Ave., #8, Linden, NJ 07036.



CRP On-Road Front Wheels

CRP has recently introduced its all-new on-road racing wheels, which have been designed to fit most popular 1/10-scale on-road racers. The solid aerodish design is a departure from that of the standard BBS wheel, not only in appearance, but also in function. The solid hub is considerably stronger and allows much less flexing, and this will improve tire adhesion. The solid-hub design also decreases the windage created by the BBS-type

wheels, especially when they're spinning at over 6,000rpm—speeds common on larger oval tracks. Molded in bright yellow, these front wheels are 1 1/8 inches wide with a 2-inch diameter.

Product no. 4128. Price: \$5.99.

For more information, contact CRP (Custom Racing Products), 3250 El Camino Real B-3, Atascadero, CA 93422.



ACOMS Wheel Radio

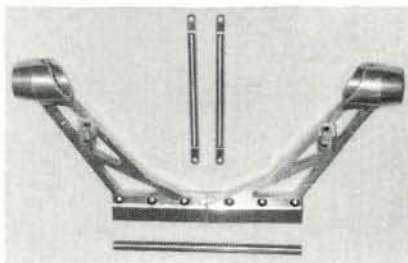
The AW-27 MkII System is unlike any other—its similarity to other systems ends with its steering wheel and throttle trigger! This unique radio includes servo-reversing switches for both channels under a front dust cover, a folding antenna for safe storage, an adjustable thumb-wheel steering-rate control, a throttle-travel adjustment knob, a battery-level meter, trims for both channels, and a charging jack built into the handle for optional Ni-Cds.

The system has a grip that can be changed for either left-hand or right-hand operation. The receiver has a compact BEC design that takes up less room and performs well under stress. Two rugged, popular AS-7 servos develop plenty of torque for the most common car and boat applications. The system comes with a one-year limited warranty—a bonus that few other manufacturers can even contemplate!

Part no. HU 162 (for 27 MHz), \$99.98; no. HU 164 (for 75 MHz), \$104.98.

For more information, contact Al-tech Marketing, P.O. Box 391, Edison, NJ 08818.

WHAT'S NEW



VERORA SPECIAL PRODUCTS RACO Training Arms

Verora Special Products' new aluminum trailing arms are designed for RACO cars and will fit either the Grand National or the Jac-Rabbit. They're now used in California, and, so far, have proven to be a definite improvement on suspension arms. Other parts to come include rack steering kits and shock kits.

Part no. VER01. Price: \$129.99.

For more information, contact Verora Special Products, 106 Jadwin Ave., So., Richland, WA 99352.

gon Racing Products, Dept. CA2, 690 Industrial Circle So., Shakopee, MN 55379.

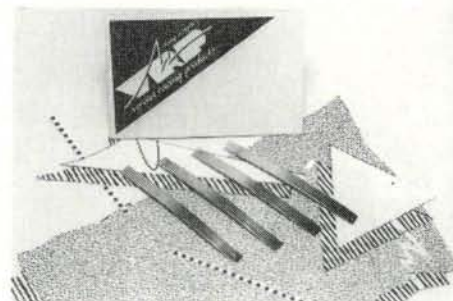


HORIZON Antenna Wrapper

Almost all radio receivers have a common characteristic—excess antenna wire. Don't cut it off! Horizon Hobby Distributors' new, black, injection-molded Antenna Wrapper neatens a seemingly endless trail of antenna wire, so you don't have to stuff it in your car or let it hang out of the antenna tube.

Part no. DLR230. Price: 49 cents each.

For more information, contact Horizon Hobby Distributors, 3102 Clark Rd., P.O. Box 6029, Champaign, IL 61821



VRP Electroflo

VRP Electroflo is a high-tech alloy that replaces braid for connecting batteries; it's lighter and easier to solder than braid. Most important, VRP Electroflo significantly increases acceleration and run time. Each package contains enough Electroflo to assemble two 7-cell packs, and there are tabs for hard wiring.

Part no. 614. Price: \$4.95.

For more information, contact VRP Inc., 4555 Groves Rd., #15, Columbus, OH 43232.



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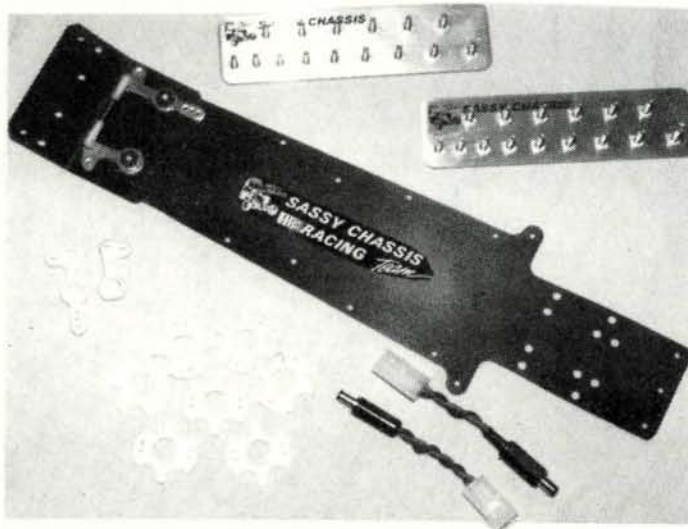
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Ram 4736 N. Milwaukee Ave. — Chicago, IL 60630

I SURVIVED...

(Continued from page 162)

ground. As I fell, I tucked in my shoulder, rolled and leaped to my feet, all the while holding the car up to prevent it from hitting the ground. As I left vapor trails behind, I heard someone in the now receding distance ask if I was all right; I didn't have time to answer—I had a race to run!

In my last qualifier, I nervously started from the pole position. Traction off the line had been a problem for everyone running the faster, but a little less stable,

radials, so all manner of additives were used to prevent spinning at the start.

I was successful with a preparation from Space Age Technologies, as long as I barely applied throttle before the first turn. The pole position made me very nervous, because I feared that I'd be run over if I started too slowly, as I'd seen this happen to others (even in the Pro Class). When the tone sounded, my anxiety caused me to punch the throttle, and I spun, getting T-boned by a number of cars.

This early trouble, and the back flip I

did on the front stretch, prevented me from improving on my best qualifier. My throbbing scraped right hand and knee made it difficult for me to drive, and brief thoughts of using a relief driver had flashed through my mind, but I didn't think that would look too cool.

Separated by just three-hundredths of a second, Rich and I were 26th and 27th in the Amateur Direct Drive Modified Class. This was quite amazing because while he seemed to have more straightaway speed with his Hyperdrive/Car

(Continued on page 184)

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8002	RC-10L Basic GR w/ Bearings	135.36

TAMIYA

C5858	Blackfoot	104.36
C5860	Monster Beetle	149.72
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I SURVIVED...

(Continued from page 180)

combo, my lap times were much more consistent. Rich spent much of the time bouncing off the outside wall and rocketing into the infield. It's unreal that two cars that looked so different could wind up qualifying so closely.

The stage had now been set. Not only was this the first half of the R/C Car Action East/West Shootout, but it would also be the battle for bragging rights back at the office! I didn't want to be shown up by my boss, and I dreaded the fun the announcers would have when we squared off.

It was a long night! I wanted to strip my car down to clean off every particle of dirt. I didn't want to lose to Rich. With every part of the car spotless, it was time to paint the driver and the interior. My savior here was the fact that this was a "stand-off" Concours, meaning that the judges wouldn't look for dashboard gauges and fire extinguishers.

The only figure Racer's Haven had was one from an RC10 kit, but that didn't matter—I just wanted "someone" in the car. I painted the little guy with a few different colors, and I sprayed the sheet of polycarbonate black, to block off the

(Continued on page 186)



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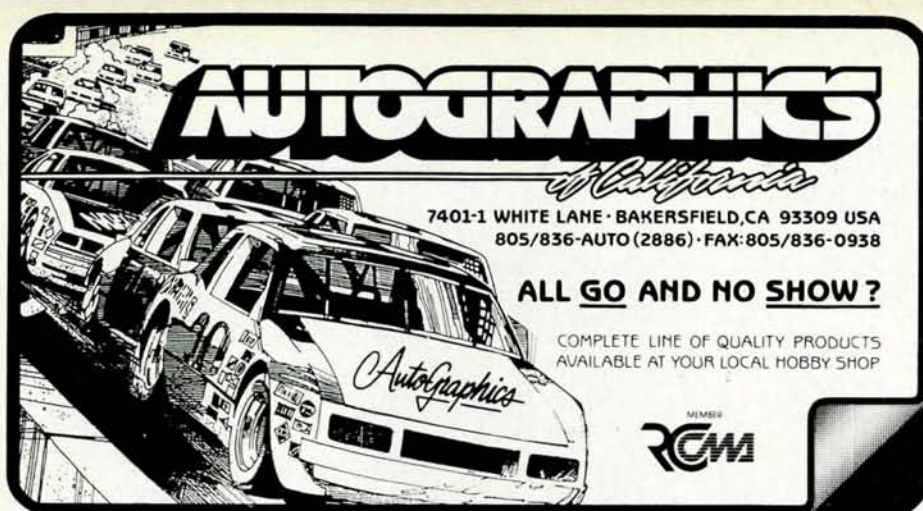
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I SURVIVED...

(Continued from page 184)

inside of the car. After much cutting and positioning, I had a pretty neat-looking car. As I collapsed around 2 a.m., I had dreams of trophies!

Sunday: The Final Story

Well, I survived the helicopter ride, and that's more than can be said about Rich's speed controller. While he was lying on the track, his brain seems to have been fried a little, and this led to him solder his battery in backwards, so frying his speed control. With that, my biggest worry was gone, as I no longer had to think about beating Rich. (I had actually been looking forward to the race, and was disappointed that we wouldn't be having our own *R/C Car Action* shootout.)

With its body painted by Bill Henning, my RC10L took 3rd in Concours, and when it was time for the C-Main, I was ready. Jan Limpach had checked my motor, and I had run a bead of CA around the edge of my CKW radials. They hadn't shown signs of coming off, but I wasn't taking *any* chances. I think I put a whole roll of tape around those batteries; there would be no mad sprinting to the pits

(Continued on page 188)

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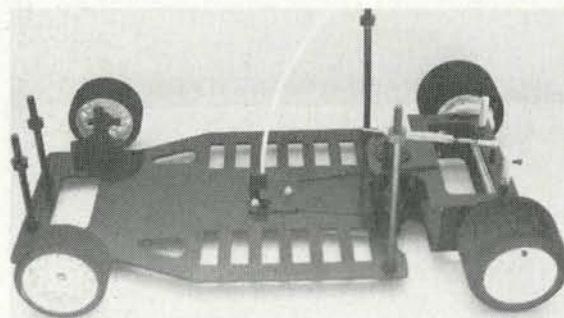
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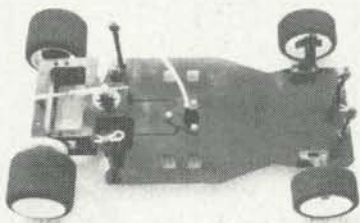
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John Beecher won Most Realistic Puller award at this meet using a custom-detailed, eight-motored Koalaty Design body. It is similar to the six-motored version shown, but longer to fit on the Pro Puller XL chassis. The six-motored body with motors sells for \$60, while the eight-motored body sells for \$75. Paint and detailing available at extra cost. Chrome hemis available separately at \$5 each plus \$1.50 S&H. All other orders please include \$7.50 S&H. (Indiana residents please include 5% Sales Tax)

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I SURVIVED...

(Continued from page 186)

today! (I was really tired of falling!)

Bud Bartos and Ricky Jordan helped me by taking care of my car on the line. When Ricky had checked the trim and positioned the car, Bud used his mysterious blue box to pump up my batteries while it was on the line. When the tone went off, I gently squeezed the throttle trigger and rolled smoothly off the line. I'd learned on Saturday that you can't win a race in the first turn, but you can surely lose it. Besides, starting toward the back of the pack, I had no worry of being run over.

I made my way all the way up to 4th place by the end of the race. I was hoping to make it into the top three, but it wasn't to be. Looking back on it now, I realize I played it too safe with choice of my gear. I was expecting more crashes and the need to negotiate traffic, but that wasn't the case. As the last two laps wound down, I could see the top three cars dumping. I was catching them at a great rate when I heard the announcer say that the 4-minute mark had passed. Bud told me that in only one more lap, I would have passed the leaders and won the race; but what can you do?

As it was, I drove my best race of the weekend when it really counted. I later looked at the print-out and saw that I finished less than 1 second away from 3rd! I turned 17 laps, but I improved my qualifying time by more than 9 seconds. I made only one mistake: a solitary spin in turn three. My average speed over the 4 minutes was 47mph, which was 3mph better than my 44mph best heat. What more could I have asked for?

For all their help, I thank Mike Walker of Twister Motors; Bud Bartos; Jan Limpach; Rick, Linda and Ricky Jordan; Kent Clausen; Sean Ireland and Tyler Clements of Team Associated; Snuffy Smith and the Hyperdrive crew; John "Hammer"

(Continued on page 191)

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I SURVIVED...

(Continued from page 188)

smith of JG; Dan Moynihan of Dan's RC tuff; Gary McAllister; and of course, Rich Hemstreet.

I did my best and had a great time! We even survived the flight home! And I learned a valuable lesson: If you're right-handed, always carry your blueberry muffin in your left hand!

ULTIMA CONVERSION

(Continued from page 132)

against, so I competed against the regular WD Stock Class. Although slightly handicapped by excess weight and a higher center of gravity, I was still more than happy with my car's performance. The car preferred to run in a higher groove than the rest of the class, so I was able to stay in the "marbles," and this led to some spectacular spin-outs. With some additional track time, I'll soon have this baby on a wire.

I was quite pleased with my first session at the track. The Victor speed control was easy to set up and gave good proportional control, and the B&R motor provided ample punch when called upon

to do so. They seem to be a good combination.

Apart from the lack of directions and the usual minor headaches associated with any after-market kit, this project was a lot of fun. If you need of a change of pace from the regular dirt- or asphalt-oval scene, I recommend that you look into this exciting form of racing—and besides,

what other class of racing makes you turn right to go left! Get my "drift"?!

*Here are the addresses of the companies mentioned in this article:

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(Continued on page 193)

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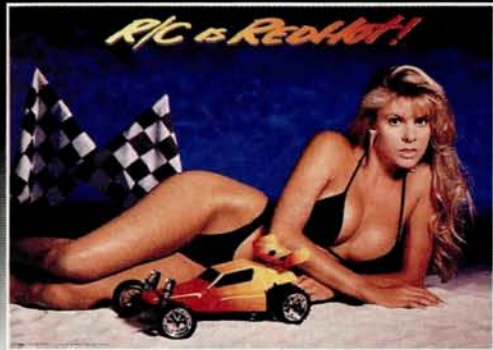
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ULTIMA CONVERSION

(Continued from page 191)

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KYOSHO RS 200

(Continued from page 143)

the shock assembly. The crucial step here is the proper filling and bleeding of the shock to obtain maximum piston function. I followed the well-detailed diagrams, and this task was a cinch.

The kit includes nylon bushings as standard equipment, but I chose to replace them with Kyosho Option House ball bearings, which decrease friction and reduce gear wear.

The RS 200 also boasts the Optimastyle, long-travel, wishbone arms. Molded from super-tough nylon material, these arms are not only "weight-conscious," but they're also able to withstand the roughest terrain without cracking or breaking.

Steps 13 through 16 encompass the installation of the radio gear. For this report, I used the Kyosho Pulsar EXP 2001. This relatively inexpensive, 2-channel, pistol-grip radio offers extras like reversible wheel control for left-handed drivers, adjustable end-point and exponential rate adjustments, throttle and trim adjustments, and much more. The kit comes with all the hardware to make the Pulsar fit flawlessly.

The final part of the assembly concerns the mounting of the scale radial-pattern tires on the plastic rims. The rims are white when they come from the factory, so I spray-painted mine with Pactra* Chrome spray. Follow the instruction manual closely; apply a small amount of glue to the rims to prevent the tires from slipping during racing.

The highly scaled Ford RS 200 body is made of clear polycarbonate. Prepare it for painting by washing the inside with a mild detergent, rinsing it with cold water

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and toweling it dry. I painted my RS 200 in three stages: First, I masked the windows to keep them clear; then I sprayed on two light coats of the new Pactra Candy Yellow; and, finally, I sprayed on two generous coats of Pactra Silver. This two-step paint application gives the finish a deep metallic appearance. Whenever you paint polycarbonate bodies, remember one basic rule: Apply the darkest colors first. If a lighter color is applied first, the darker one will show through it.

After that, I cut off all the excess material, following the body lines on the mold. The instruction manual suggests that you cut away the "moon" roof to allow proper engine ventilation. At first, I didn't do this, but I found that the engine seemed to need the extra ventilation to run properly without overheating. The final body detailing was completed with the decals included in the kit.

PERFORMANCE: To run the RS 200,

(Continued on page 220)

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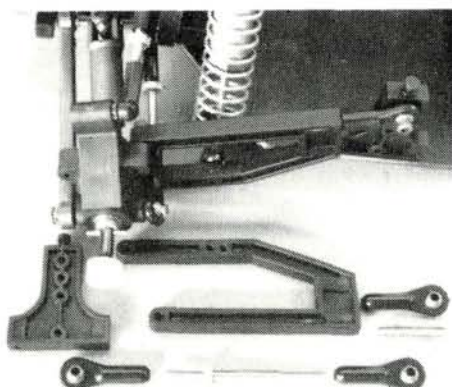
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KYOSHO RS 200

(Continued from page 193)

you'll need good-quality glow fuel. I've found that a 15-percent nitro blend is the best for obtaining peak performance from O.S. engines. The kit includes a handy, plastic, re-sealable fuel container that makes pit stops for refueling quick, easy and safe. Also included in the kit are a glow-plug battery box and leads; just add four "D" batteries and you're ready for ignition.

If you're a newcomer to gas-powered cars, remember that you should allow a special, initial, motor break-in period before you run the engine at maximum rpm. To accomplish this, I ran my car at a variable speed for short periods and allowed it to encounter different force loads, such as small upward and downhill runs. When I had used approximately two tanks of fuel, I considered my RS 200 to be broken-in and ready for the fun of high-speed rallying.

Finding a spot on which to run a gas-powered model may be a problem because it's noisy. Town parks, parking lots and fields are usually off-limits, and you must get permission from the owner of the facility before you tear up the turf! My

(Continued on page 222)



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KYOSHO RS 200

(Continued from page 220)

first post-break-in run was at a newly paved local parking lot, which was very smooth and free of debris. After filling the tank with fuel, I connected the red lead wire to the tip of the glow plug and the black lead to the cylinder head; I depressed the fuel-tank primer No. 2 button once, and I pulled sharply on the recoil-starter handle. My O.S. engine needed about five pulls to ignite, but it was extremely quiet, so initial carburetor tuning was a pleasure.

After a single prime and one pull on the recoil starter, the RS 200 was ready for blastoff. I gingerly depressed the Pulsar's trigger, the RS 200's clutch engaged, and the car rolled out to the crest of a long straightaway. Without hesitating, I buried the trigger, and the RS 200 sped quickly down the course, quickly increasing acceleration. At the end of the straightaway, I pushed the trigger forward to apply what I thought was a little braking, but the car came skidding to a halt.

I subsequently tested the RS 200's handling capabilities by driving a large figure-8 pattern and, at full throttle, turning hard left and then hard right. The car

(Continued on page 224)

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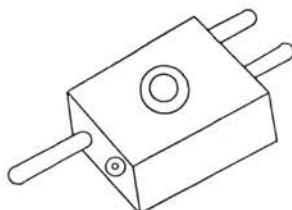
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NEW

KYOSHO RS 200

(Continued from page 222)

responded extremely well, absorbing each turn gracefully and showing no signs of tipping over or rolling. I attribute most of the car's superb handling to its excellent center of gravity, which results from its mid-engine-mount design and its superior Optima-style suspension system.

To say the RS 200 "ate up" the on-road course is a gross understatement; but what about *off-road* handling? For this part of the Track Report, I went to a remote construction site. At first, I was a little hesitant, because the area was wet and muddy, but I realized that the real-life rally event features all types of terrain and conditions, so after topping-off the tank and giving the starter one quick pull, I was ready for a mud-bog rally. I was impressed with the full-time 4WD power, as the car sped off, flinging mud from all the tires. When the tires became caked with mud, however, the car's performance decreased dramatically.

I then sought out an area of loose, dry dirt for the final part of the test. There, the RS 200 ran impressively. It seemed to take command, as it slid into corners without losing power and quickly accelerated

(Continued on page 226)

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KYOSHO RS 200

(Continued from page 224)

out of them. Jumps were a piece of cake for its high-tech suspension system, which allowed the car to land flat-footed each

time, and no matter how hard I tried to flip it, I just couldn't.

The advantage of running a gas-powered RS 200 instead of an electric car is that the total running time from a tank of

fuel far exceeds that of a battery pack. Pistops are quick and easy; simply refill the tank and you're off. I had so much fun running my RS 200 that I completely lost track of the time, and as the sun set, I wished I had running lights so that I could stay longer.

The Kyosho Ford RS 200 is an excellent choice for the newcomer to gas-powered model cars, and as my experience shows, even those who have years of R/C car experience will enjoy getting in quickly to the track. Have fun!

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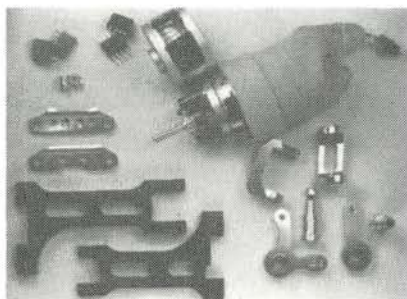
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SCOPING OUT

(Continued from page 147)

higher than the specified .0025 ohm, but all manufacturers list only the drop for the FETs, not the wire, the printed-circuit board, or the solder joints.

My final test is the heat build-up test, which I ran for 15 minutes at full throttle and 15 minutes at half throttle. I deliber-

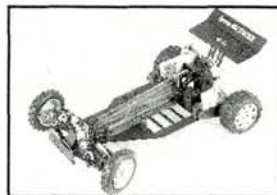
(Continued on page 228)

Bullet

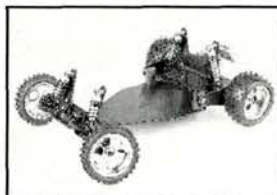
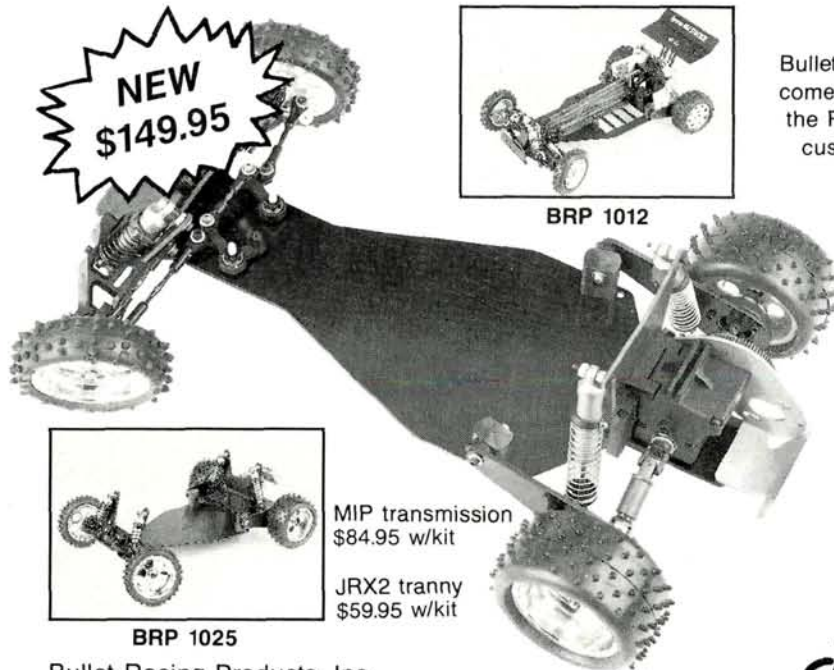


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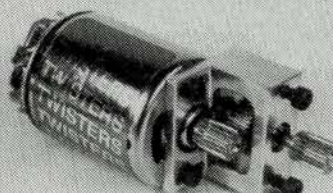
SCOPING OUT

(Continued from page 226)

ately leave off the heat sinks and provide no cooling air while passing a fairly hefty 15 amps through the controller. The FETs warmed up only slightly during this test, and this is what I'd expect, if the FET's resistance is as low as Tekin claims. For most racing, you should be able to run without heat sinks and so save weight. With the heat sinks installed and adequate cooling air, there should be no heat problem, even under the most severe racing conditions.

The next question is: Can I really run this \$160 treasure without a fuse? I made a shorting device out of two large alligator clips and a 2-inch piece of monster wire. I then clipped this device across the speed controller's output with the throttle wide open. A quick check of the current showed that the controller was handling my full lab supply—about 41 amps. The speed controller shut down after handling the dead short for 1 minute. The ESC 600 became so hot that I burned my finger when I touched the heat sink. This time, I really thought I had destroyed my test specimen, but I gave it a minute to cool off, reset the Tempfet circuit by disconnecting and then reconnecting the battery,

(Continued on page 232)



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SCOPING OUT

(Continued from page 228)

and the ESC 600 PRO was pumping full current into the short again.

I ran the test twice; each time, the controller sprang back to life. If you don't get it wet or wire it up backwards, the ESC 600 should withstand much abuse.

The testing over, it was time to mount the Tekin ESC 600 into a race car, and I installed it in my Ultima Pro. The installation was quite easy, because the car is already set up to accept a "connectorless," hard-wired setup. I did install a Sermos Powerpole connector on the red and black battery leads. If you can't make good solder joints, consider a speed controller that has connectors, or ask someone to help you install the ESC 600. This controller is designed for experienced drivers, and you should know how to solder if you want to set up a race car properly.

As I was installing it, I noticed a small pair of twisted wires sticking out of the side. This turned out to be a BEC bypass that allows the controller to run on a 4-cell battery pack. The ESC 600 is quite small and should be good for 1/12-scale, 4-cell cars. A problem with the ESC 600 is the absence of specific instructions on how to connect a three-wire speed controller that isn't supplied with battery or motor connectors. The picture in the instruction sheet shows the hookup for the ESC 300 with its four wires and connectors, but there's no picture for the ESC 600.

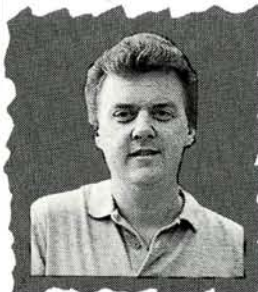
In its manual, Tekin mentions that the BEC voltage is set higher in the ESC 600 than in most speed controllers. I measured the BEC voltage and found that, with a 6V input, the BEC's output was 5.48 volts; with a 9.85V input (a 7-cell pack), the BEC's output was 5.8 volts. This substantiated Tekin's claims.

With the controller installed and sev-

(Continued on page 234)

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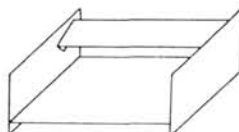
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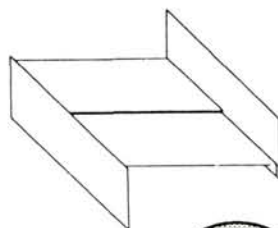


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SCOPING OUT

(Continued from page 232)

eral 7-cell battery packs charged, I headed for the track, where it was immediately obvious that this was a strong controller. With the oscilloscope, I had observed that the throttle response was linear and precise. This observation was verified on the track, because the 600 had a very smooth low end and mid range. When I put the pedal to the metal, however, the car had snap that only a first-class speed controller can provide. Throughout the day's running, the FETs warmed only slightly (I ran the heat sinks).

In conclusion: I liked the Tekin ESC 600's small size, lightness and, of course, its hot performance. The Tempfet FETs live up to their reputation of providing low "on" resistance and being burnout-proof. Tekin has used Select Pro Mosfet and monster wire to produce a controller that has a lower resistance than any 6-FET speed controller I've tested so far.

I disliked the ESC 600's screwdriver. It's free, so just drop it into the trash and dig out your trusty jeweler's screwdriver. I would have liked instructions on how to connect a three-wire speed controller, too.

Installing the ESC 600 requires soldering skills, and it does have a \$160 price tag, but if you're looking for a step-up in performance, it could be just what you're looking for.

**Here are the addresses of the companies mentioned in this article:*

Tekin Electronics, 970 Calle Negocio, San Clemente, CA 92672.

Sermos R/C Snap Connectors, Cedar Corner Stn., P.O. Box 16787, Stamford, CT 06905. ■

FUNNY CAR

(Continued from page 159)

the Parma Pro Funny Car a wide berth, but that would be the same as throwing out the baby with the bath water. Bearing in mind that the car is sold as an entry-level car, I headed to the drag strip at Fine Design in Middletown, NY. I met Jaime "Crash" Colon, one of their team drivers who produces phenomenally consistent reaction times of .03 second $\pm$.001 second. Watching his launches is like watching a precision machine in motion.

Jaime made sure that the car tracked true on the carpet track; he peaked the batteries and staged. The tree lights went off, hit green, and the Pro Funny Car left the line. The differential unwinds with a distinctive sound—almost like a turbo-charger winding up. The car ran an unspectacular 4.154 seconds at 21mph down the scale 132-foot quarter-mile as it started to do a severe "squirrel" just before the traps. It was a disappointing run.

It went back to the pits for a peak and the addition of some traction compound. Staged, it jumped off the line for a 4.087-second run, but this time, it held true for the entire ride at a hotter 33mph. A third run (no further battery peaking) confirmed the Pro Funny Car's potential at 4.128—

again at 33mph. (Jaime's reaction time or the third pass was .017 second!) The gearing for all runs with the stock motor was 3:1 (78/26, spur/pinion).

The Bottom Line

Obviously, you won't take Parma's Funny Car out of the box and enter a national event where competitive times are at the 2 $\frac{1}{2}$ -second level. If you want to do some bracket racing, where you run against a pre-selected elapsed time, however, with the deluxe kit, you can go from the box to the track in about three hours.

On the other hand, if you're serious about drag racing and have the dollars to back up your intentions, the standard kit will serve you well as a platform to which you can add the goodies of your choice. Ball bearings, three-quarter-size sub-C cells and a modified motor are some of the items you'll need to make this car really move.

The final decision must be yours. Even though the extremely poor instruction manual causes you more work, Parma's Pro Funny Car might be just right to get your feet wet in drag racing.

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